



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276

THOMAS V. SKINNER, DIRECTOR RCRA REMEDIAL ACTION PLAN PERMIT

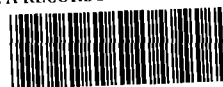
1198010003 -- Madison County
Chemetco, Inc.
ILD048843809
RCRA Administrative Record

Permit No. B-172
Date Issued: October 5, 2000
Effective Date: October 5, 2000
Expiration Date: April 5, 2001

PERMITTEE (OWNER AND OPERATOR)

Chemetco
P.O. Box 67
Hartford, Illinois 62048

US EPA RECORDS CENTER REGION 5



1000315

A Remedial Action Plan Permit (RAPP) is granted to Chemetco, as owner and operator, to construct and operate a temporary on-site container treatment unit (TU). This unit shall consist of a steel reinforced container of approximately 20 cubic yards.

The hazardous remediation waste will be treated on site in a container prior to off site disposal. As stated in 724.653 (a) a temporary container storage areas may be used to treat remediation wastes during remedial activities. The treatment container will be located within the area identified as Containment Area #1 in the application.

This permit is issued pursuant to Section 39(d) of the Illinois Environmental Protection Act and 35 Ill. Adm. Code (IAC). The Permittee shall comply with all terms and conditions of this permit and the applicable regulations contained in 35 IAC Parts 703 and 724. This RAPP is issued based on information submitted by the Permittee. Any inaccuracies found in the permit application may be grounds for termination or modification of this permit, and potential enforcement action.

The application approved by this permit consists of the documents listed below.

<u>DOCUMENT</u>	<u>DATED</u>	<u>RECEIVED</u>
Remedial Action Permit Application	April 14, 2000	April 17, 2000
RCRA Remedial Action Permit (RAP) Application (LPC-PA21)	May 5, 2000	May 5, 2000
Additional Information	May 8, 2000	May 8, 2000

This permit is issued subject to the following special conditions and the attached standard conditions:

1. The temporary unit covered under this permit is the treatment container, not the entire surface impoundment identified as Containment Area #1.

GEORGE H. RYAN, GOVERNOR

2. The waste streams to be treated under this permit consist of (1) zinc oxide, (2) zinc oxide contaminated soil and (3) contaminated debris which are hazardous for lead (D008) and cadmium (D006). The debris consist of limestone rock in sizes from two to six inches in diameter and tree roots and stumps. This remediation waste originated from the zinc oxide release found in September 1996.
3. Waste or other material from outside of the area undergoing remediation shall not be treated in the temporary treatment unit.
4. Due to the differing physical characteristics of the waste streams to be treated, the waste streams shall not be commingled at any time prior to and/or during treatment.
5. Chemetco shall contact the Collinsville Regional office before the collection of the initial confirmation samples for each waste stream; zinc oxide, zinc oxide contaminated soil and contaminated debris.
6. At the end of each week treatment is conducted, Chemetco must fax a summary of weekly activities to the Collinsville Regional Office. The weekly activity log must include the dates of waste treatment, amount of waste treated each day, the type of waste treated, the amount of waste sent off-site each day for disposal, amount of waste on-site at the end of each day, manifest numbers and weights on each manifest, and a narrative description of any problems associated with the treatment process, including any implementations of the contingency plan, batches of waste that fail to meet the treatment standards, equipment failures, etc. This report must be signed by a designated facility representative. The Collinsville fax number is 618/346-5155.
7. Chemetco shall maintain a operating record for the treatment unit. The operating record must include the following:
 - a. dates of waste treatment;
 - b. amount of waste treated each day;
 - c. the amount of waste sent off-site each day for disposal;
 - d. a table identifying what batch of waste is handled in each container and the associated date of treatment (see condition 14);
 - e. a log identifying any batches of waste that fail to meet the treatment standards;
 - f. amount of waste on-site at the end of each day;
 - g. manifest numbers and weights on each manifest;
 - h. records of inspections;
 - i. a map as required in condition 9 ; and
 - j. a narrative description of any problems associated with the treatment process, including any implementations of the contingency plan, batches of waste that fail to meet the treatment standards, equipment failures, etc. and any corrective measures that were taken to address any problems.

8. Movement of the treatment container within Containment Area #1 shall be kept to a minimum.
9. The location of the treatment container and the transfer area(s) (area(s) where the waste is transferred into containers or trucks for off site shipment) shall be identified by the consulting engineer on a scaled map of the remediation area. This map shall be at a scale of 1 inch equal to not more than 100 feet (see Condition 7).
10. Prior to the movement of the treatment container, its location shall be physically marked with at least two stakes driven into the soil at opposing corners of the container.
11. The treatment standards that the waste streams must meet prior to disposal are identified in Table 3 of the permit application.
12. The treatment batches shall be sampled on the following schedule:

Level 1 sampling: Batches 1 - 10, every batch (2 samples per batch, see condition 17);
Level 2 sampling: Batches 10 - 35, every 5th batch;
Level 3 sampling: Batches 36 and greater, the first batch of the day, every 25th batch after that and the last batch of the day.
13. A batch is the waste that is treated at the same time in the treatment container.
14. Each container used to transport the treated waste off-site shall be uniquely identified. A record of what batch(es) is/are placed in what container shall be recorded in the operating record for the treatment unit.
15. Batches of any given wastestream may not be transported off-site until the analytical results from the first 10 batches are obtained and it has been verified that all of the batches meet the treatment standards.
16. If a batch of waste fails to meet the treatment standards:
 - a. no treated waste shall be transported off site until additional sampling (see item c. below) is performed and the analytical data demonstrates that the waste meets the treatment standard;
 - b. the batch shall be treated again and re-sampled;
 - c. the sampling schedule shall start over with Level 1 sampling (see condition 12) with the batch that failed being batch number 1 for the purposes of the treatment schedule.

That is, the batch that failed and the next nine (9) batches shall be sampled, then one of five for the following batches, and so on. The batches that were previously sampled do not have to be re-sampled.

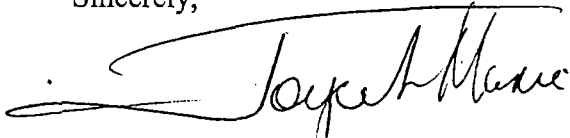
17. The samples of the treated waste shall be obtained from the lower half (vertically) of the treatment container. During the testing of the first ten loads, two samples shall be obtained from each end of the container. All samples shall be representative of the waste in the container.
18. Samples of the treated batches of debris shall be composed mostly of the debris, not the material surrounding the debris.
19. Trucks, roll off boxes or other equipment shall be decontaminated prior to exiting contaminated areas. Decontamination of equipment shall be performed in accordance with Attachment F, Section 3.2.2 of the application.
20. A report documenting the results of the treatment shall be submitted to the Illinois EPA within sixty (60) days of completion of the treatment. This report shall include at a minimum the following:
 - a. A narrative description of the results of the treatment program and problems associated with it.
 - b. A copy of the operating record required in Condition 7 above.
 - c. The volume of waste, waste residue and contaminated soil removed and treated. The term waste includes wastes resulting from decontamination activities.
 - d. Scaled drawings showing the horizontal and vertical boundaries of the extent of contaminated soil removal effort.
 - e. A description of the method of waste handling and transport.
 - f. Information documenting the results of the treatment verification sampling/analysis efforts. The goal of presenting this information should be to describe, in a logical manner, the activities and results associated with the sampling/analysis effort. At a minimum, this information must include:
 - (1) identification of the reason for the sampling/analysis effort and the goals of the effort;

- (2) a summary in tabular form of all analytical data, including all quality assurance/quality control data;
 - (3) a description of the sampling procedures, sample preservation procedures and chain of custody procedures;
 - (4) identification of the test method used and detection limits achieved, including sample preparation, sample dilution (if necessary) and analytical inferences;
 - (5) copies of the final laboratory report sheets, including final sheets reporting all quality assurance/quality assurance dates;
 - (6) a summary of all procedures used for quality assurance/quality control, including the results of these procedures; and
 - (7) a discussion of the data, as it relates to the overall goal of the treatment effort.
21. All equipment which has come into contact with the contaminated material shall be decontaminated.
 22. Soil samples shall be obtained from each side, 4 sampling locations, of where the mixing container was located.
 23. Soil samples shall be obtained from any areas where spills of waste occurred during the transfer of the treated waste from the treatment container to the trucks or roll off boxes used for transport off-site.
 24. All soil samples shall be analyzed as required in Condition 6 of the Illinois EPA's April 26, 2000 closure plan approval letter.
 25. Additional sampling must be performed until the extent of the contamination is determined.
 26. All soil contamination which is present at levels above the cleanup objectives must be remediated in order to achieve clean closure of the unit.
 27. If hazardous waste is shipped outside of the United States for treatment or disposal, the Permittee shall comply with the hazardous waste export requirements or 35 IAC 722, Subpart E.
 28. The current cost estimate for closure is \$1,737.80. Pursuant to 35 IAC 724, Subpart H, the Permittee shall maintain financial assurance for the amount of the approved closure cost estimate and the applicable liability requirements.

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If you have any questions regarding this permit, please contact Kevin Lesko at 217/524-3271.

Sincerely,

A handwritten signature in dark ink, appearing to read "Joyce L. Munie". The signature is fluid and cursive, with a long horizontal stroke extending to the left.

Joyce L. Munie, P.E.
Manager, Permit Section
Bureau of Land

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JLM:KL\mls\002062S.WPD

^{JHK}
Attachment: Standard Conditions for Remedial Action Plan Permits (RAPPs)
Closure Certification Statement

STANDARD CONDITIONS FOR REMEDIAL ACTION PLAN PERMITS (RAPPs)

1. Pursuant to 35 IAC 702.181, the existence of a RAPP shall not constitute a defense to a violation of the Environmental Protection Act or applicable regulations. Issuance of this permit does not convey property rights or any exclusive privilege. Issuance of this permit does not authorize any injury to property or invasion of other private rights, or infringement of state or local law or regulations.
2. Pursuant to 35 IAC 702.141, the Permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Illinois Environmental Protection Act and is grounds for enforcement action, permit revocation or modification, or denial of a permit renewal application.
3. Any claim of confidentiality must be asserted in accordance with 35 IAC 703.302(e) and 35 IAC 120.
4. This permit is not transferrable to any person or corporation unless the transfer is approved in writing by the Illinois EPA. All permit transfers shall be conducted in accordance with 35 IAC 703.305(c).
5. Pursuant to 35 IAC 702.152(h), if the Permittee becomes aware that they failed to submit relevant facts in the permit application, or submitted incorrect information in a permit application or in any report to the Illinois EPA, the Permittee shall promptly submit such facts or information to the Illinois EPA.
6. This RAPP may be appealed in accordance with the provisions contained in 35 IAC 703.303(f).
7. This RAPP is approved pursuant to 35 IAC 703 and 724. The issuance of this RAPP does not constitute approval of any remediation plan or cleanup objective under 35 IAC 740 or 742.
8. If the Permittee wishes to modify the RAPP, the Permittee shall send an application for permit modification to the address below.

Illinois Environmental Protection Agency
Bureau of Land
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276

The Permittee shall submit the RCRA Remedial Action Plan (RAP) Application form and a detailed description of the requested modification. If the Illinois EPA believes the requested change(s) would significantly change the management of remediation waste, the Illinois EPA shall comply with the draft RAPP and public notice requirements of 35 IAC 703.303(d). The certification of closure, if approved, shall not be considered a significant change requiring public notice under 35 IAC 703.303(d).

9. Pursuant to 35 IAC 702.149, the Permittee shall allow an authorized representative of the Illinois EPA, upon the presentation of credentials and other documents as may be required by law, to:
 - a. Enter at reasonable times upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
 - b. Have access to an copy, at reasonable times, any records that must be kept under the conditions of this permit;
 - c. Inspect at reasonable times any facilities, equipment, practices, or operations regulated or required by this permit;
 - d. Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the appropriate Act, any substances or parameters at any location.
10. All permit applications, reports, or information submitted to the Illinois EPA, in regards to the RAPP shall be signed and certified in accordance with 35 IAC 702.126.
11. The Permittee shall comply with the security provisions of 35 IAC 724.101(j)(3), and the emergency coordinator requirements of 35 IAC 724.101(j)(ii).
12. Pursuant to 35 IAC 724.101(j)(4), the Permittee shall inspect the remediation waste management site for malfunctions, deterioration, operator error, and discharges that may be causing or may lead to a release of hazardous waste constituents to the environment or a threat to human health. Inspections shall be conducted often enough (at least once each operating day) to identify problems in time to correct them before they harm human health or the environment. If a hazard has already occurred, the Permittee shall immediately take remedial action to minimize impacts on human health and the environment. Within 30 days of any releases, the Permittee shall submit to the Illinois EPA, a description of the release and a description of any corrective measures taken.
13. If waste is taken off-site for treatment or disposal, the Permittee shall comply with the land disposal restrictions contained in 35 IAC, Part 728.
14. If hazardous waste is shipped off-site, the Permittee shall comply with the manifest, pre-transport, and reporting and record keeping requirements of 35 IAC 722, Subparts B, C, and D. If non-hazardous special waste is shipped off-site, the Permittee shall comply with the manifest requirements of 35 IAC 808.121 and 808.122. In either case, a transporter licensed in accordance with 35 IAC, Section 809 must be used when transporting hazardous or non-hazardous special waste.
15. If the Permittee wishes to renew this permit, the Permittee shall follow the process for application and issuance of RAPPs found in 35 IAC 703, Subpart H. If the Permittee wishes to continue an activity allowed by this permit after the expiration date of this permit, the Permittee must apply for a new permit at least 30 days before this permit expires, unless permission for a later date has been granted by the Illinois EPA. This permit and all conditions herein will remain in effect beyond the permit's expiration date if the Permittee has submitted a renewal application at least 30 days before this permit expires, and through no fault of the Permittee, the Illinois EPA has not issued a new permit.
16. Pursuant to 35 IAC 703.305(a), the Permittee shall maintain all data used to complete the RAP application, and any supplemental information the Permittee submits to the Illinois EPA, for a period of at least three years from the date the original RAP application is signed. This information shall be made available to representatives of the Illinois EPA upon request.
17. Pursuant to 35 IAC 724.101(j)(13), the Permittee shall maintain records documenting compliance with 35 IAC 724.101(j)(1) through (12) at the facility.
18. The Permittee shall demonstrate compliance with 35 IAC 724, Subpart H by providing documentation of financial assurance, as required by 35 IAC 724.251, in at least the amount of the approved closure cost estimate and the applicable liability requirements. Changes in financial assurance mechanisms must be approved by the Illinois EPA in accordance with 35 IAC 724.243. The Permittee shall comply with 35 IAC 724.248 whenever necessary.

Closure Certification Statement

Chemetco

Closure Log B-172

To meet the requirements of 35 Ill. Adm. Code 724.215, this statement is to be completed by both a responsible officer of the owner/operator (as defined in 35 Ill. Adm. Code 702.126) and by an independent licensed professional engineer upon completion of closure. Submit one copy of the certification with original signatures and two additional copies.

The hazardous waste management container treatment, as described in Permit Application, Log No. B-172 has been closed in accordance with the specifications in the approved closure plan. A report documenting that closure has been carried out in accordance with the approved plan is attached.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

USEPA ID Number

Facility Name

Signature of Owner/Operator Date
Responsible Officer

Name and Title of Owner/Operator
Responsible Officer

Signature of Licensed P.E.

Name of Licensed P.E. and Illinois
Licensed Number

Mailing Address of P.E.:

Licensed P.E.'s Seal:

Date



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276

THOMAS V. SKINNER, DIRECTOR

217/524-3300

October 5, 2000

CERTIFIED MAIL
7099 3400 0006 5939 1054

Chemetco
Attn.: Kim Fock, Manager, Engineering and Maintenance
P.O. Box 67
Hartford, Illinois 62048

Re: 1198010003 -- Madison County
Chemetco, Inc.
ILD048843809
Draft Remedial Action Plan Permit (RAPP) Log No. B-172
RCRA Administrative Record File

Dear Mr. Fock:

Attached is a final RCRA Remedial Action Plan Permit (RAPP) for Chemetco. The RAPP allows Chemetco to construct and operate a temporary on-site container treatment unit

The final permit decision is based on the administrative record contained in the Illinois EPA's files. The contents of the administrative record are described in 35 Illinois Administrative Code (IAC) Section 705.211. Read this document carefully. Failure to meet any portion of the permit could result in civil and/or criminal penalties.

The Illinois EPA received no comments on the draft RAPP, therefore, in accordance with 35 IAC 703.303(a)(3), the final RAPP will become effective immediately upon issuance.

GEORGE H. RYAN, GOVERNOR

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If you have any questions concerning this permit, please contact Kevin D. Lesko at 217/524-3271.

Sincerely,

Joyce L. Munie by TJO

Joyce L. Munie, P.E.
Manager, Permit Section
Bureau of Land

JLM:KL^{fl}mls\002064S.WPD
JH

Enclosures: RCRA RAP Permit

cc: RCRA Administrative Record File
CSD Environmental Services -- Cindy S. Davis, P.G.
Illinois Attorney General's Office -- Jim Morgan
USEPA Region V -- Harriet Croke
USEPA Region V -- Pat Kuefler, DRE-9J
USEPA Region V -- Tom Martin, CA-29A
USEPA Region V -- Chris Black, DE-9J
US Department of Justice -- Greg Suky

FACT SHEET
DRAFT REMEDIAL ACTION PLAN PERMIT (RAPP)
1198010003 -- Madison County
Chemetco, Inc.
ILD048843809
Log No. B-172

This fact sheet has been prepared pursuant to the requirements of Title 35 Illinois Administrative Code (35 IAC) Section 703.303(b). The fact sheet is intended to be a brief summary of the principal facts and significant factual, legal, methodological, and policy questions considered in preparing a draft RAPP. This RAPP will allow Chemetco to construct and operate a temporary on-site treatment unit. The unit would treat hazardous remediation waste in a 20 cubic yard container prior to off site disposal of the waste. The RAPP does not cover any other remedial activities (such as soil removal and the assignment of corrective action objectives).

I. GENERAL FACILITY DESCRIPTION

Chemetco is located at:

Chemetco
3754 Chemetco Lane
Hartford, IL 62048
Latitude and Longitude: N30°48' and W90°06'
618/254-4381

On September 18, 1996, members of the Illinois EPA and USEPA discovered a release of zinc oxide during a RCRA inspection of the Chemetco facility. The zinc oxide was discharging from a pipe located south of Oldenburg Road into a wetlands area.

On January 31, 2000 Chemetco submitted a RCRA closure plan for the zinc oxide release area. This closure plan was approved by the Illinois EPA on April 26, 2000. This plan included a proposal to investigate the extent of the soil contamination among other required components. A groundwater monitoring plan was proposed to determine if groundwater had been impacted due to the release. Additionally, the RCRA closure plan proposed the submittal of a RAPP application for the on-site treatment of the contaminated material. This RAPP application is the subject of this permit.

The waste streams to be treated under this permit consist of (1) zinc oxide, (2) zinc oxide contaminated soil and (3) contaminated debris. The debris consist of limestone rock in sizes from two to six inches in diameter and tree roots and stumps. Approximately 1,500 to 2,500 cubic yards of waste will be treated under this permit. This amount may increase depending on the extent of the contamination, which has yet to be defined. The waste streams are characterized as RCRA hazardous due to the amount of lead (D008) and cadmium (D006) present in the waste.

The waste will be mixed with Enviro-Blend, a proprietary treatment compound, which will render the waste non-hazardous. The mixing will be conducted in a steel reinforced roll off box using the bucket attachment of a trackhoe. The treatment unit will be located within an area identified as Containment Area #1. Once the mixing is completed samples will be obtained to verify that the waste has been adequately treated. The waste will be transferred to trucks or roll off boxes for transport off site. The waste will be disposed as a non-hazardous special waste.

II. PERMIT TERMS AND CONDITIONS

Attached is a draft RAPP. The RAPP contains conditions necessary to ensure compliance with 35 IAC, Parts 703, 724 and 728.

If a final RAPP is issued, Chemetco may modify the RAPP by submitting a RCRA Remedial Action Plan Application and a detailed description of the proposed modification. Prior to implementing any modification, Chemetco must receive written approval from the Illinois EPA. If Chemetco wishes to renew the RAPP, it must follow the procedures for application and issuance of a RAPP found in 35 IAC 703, Subpart H. If a RAPP is issued and Chemetco fails to comply with any terms or conditions of the permit, or the RAPP application, the permit may be revoked or modified by the Illinois EPA.

III. PROCEDURES FOR REACHING A FINAL DECISION

Prior to Illinois EPA reaching a final permit decision, the public is given 45 days to review the permit application and to comment on the draft permit conditions. The comment period will begin on July 5, 2000 and will end on August 21, 2000.

If no public comments are received on the draft RAP permit, the permit will become effective immediately after the Illinois EPA issues the final permit decision, unless the permit decision is appealed.

Copies of the RAPP application, draft permit, and fact sheet are available for review at:

Hartford Public Library
143 West Hawthorne
Hartford, IL 62048

The administrative record for the RAPP is open for public inspection, by appointment only, at the Illinois EPA Springfield headquarters from 8:30 a.m. to 5:00 p.m., Monday through Friday. The administrative record contains the RAPP application, fact sheet, and other supporting documents and correspondence submitted to the Illinois EPA. Inspections of the administrative record must be scheduled in advance by contacting Jerry Kuhn at 217/524-3300.

For further information regarding the permit process or to submit written comments on the draft permit, please contact:

Illinois Environmental Protection Agency
Jerry Kuhn, RCRA Unit Manager
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276
217/524-3300

In response to requests received during the comment period or at the discretion of the Illinois EPA, an informal public hearing may be held to clarify one or more issues concerning the RAPP application. A request for a public hearing must be in writing and shall state the objection to the issuance of the RAPP and the nature of the issues proposed to be raised in the hearing. Public notice will be issued forty-five (45) days before any public hearing.

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276

THOMAS V. SKINNER, DIRECTOR

RCRA REMEDIAL ACTION PLAN PERMIT

1198010003 -- Madison County
Chemetco, Inc.
ILD048843809
RCRA Administrative Record

Permit No. B-172
Date Issued:
Effective Date:
Expiration Date:

DRAFT

PERMITTEE (OWNER AND OPERATOR)

Chemetco
P.O. Box 67
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9. The location of the treatment container and the transfer area(s) (area(s) where the waste is transferred into containers or trucks for off site shipment) shall be identified by the consulting engineer on a scaled map of the remediation area. This map shall be at a scale of 1 inch equal to not more than 100 feet (see Condition 7).
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Level 2 sampling: Batches 10 - 35, every 5th batch;
Level 3 sampling: Batches 36 and greater, the first batch of the day, every 25th batch after that and the last batch of the day.
13. A batch is the waste that is treated at the same time in the treatment container.
14. Each container used to transport the treated waste off-site shall be uniquely identified. A record of what batch(es) is/are placed in what container shall be recorded in the operating record for the treatment unit.
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 - a. no treated waste shall be transported off site until additional sampling (see item c. below) is performed and the analytical data demonstrates that the waste meets the treatment standard;
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 - c. the sampling schedule shall start over with Level 1 sampling (see condition 12) with the batch that failed being batch number 1 for the purposes of the treatment schedule.

That is, the batch that failed and the next nine (9) batches shall be sampled, then one of five for the following batches, and so on. The batches that were previously sampled do not have to be re-sampled.

17. The samples of the treated waste shall be obtained from the lower half (vertically) of the treatment container. During the testing of the first ten loads, two samples shall be obtained from each end of the container. All samples shall be representative of the waste in the container.
18. Samples of the treated batches of debris shall be composed mostly of the debris, not the material surrounding the debris.
19. Trucks, roll off boxes or other equipment shall be decontaminated prior to exiting contaminated areas. Decontamination of equipment shall be performed in accordance with Attachment F, Section 3.2.2 of the application.
20. A report documenting the results of the treatment shall be submitted to the Illinois EPA within sixty (60) days of completion of the treatment. This report shall include at a minimum the following:
 - a. A narrative description of the results of the treatment program and problems associated with it.
 - b. A copy of the operating record required in Condition 7 above.
 - c. The volume of waste, waste residue and contaminated soil removed and treated. The term waste includes wastes resulting from decontamination activities.
 - d. Scaled drawings showing the horizontal and vertical boundaries of the extent of contaminated soil removal effort.
 - e. A description of the method of waste handling and transport.
 - f. Information documenting the results of the treatment verification sampling/analysis efforts. The goal of presenting this information should be to describe, in a logical manner, the activities and results associated with the sampling/analysis effort. At a minimum, this information must include:
 - (1) identification of the reason for the sampling/analysis effort and the goals of the effort;

- (2) a summary in tabular form of all analytical data, including all quality assurance/quality control data;
 - (3) a description of the sampling procedures, sample preservation procedures and chain of custody procedures;
 - (4) identification of the test method used and detection limits achieved, including sample preparation, sample dilution (if necessary) and analytical inferences;
 - (5) copies of the final laboratory report sheets, including final sheets reporting all quality assurance/quality assurance dates;
 - (6) a summary of all procedures used for quality assurance/quality control, including the results of these procedures; and
 - (7) a discussion of the data, as it relates to the overall goal of the treatment effort.
21. All equipment which has come into contact with the contaminated material shall be decontaminated.
22. Soil samples shall be obtained from each side, 4 sampling locations, of where the mixing container was located.
23. Soil samples shall be obtained from any areas where spills of waste occurred during the transfer of the treated waste from the treatment container to the trucks or roll off boxes used for transport off-site.
24. All soil samples shall be analyzed as required in Condition 6 of the Illinois EPA's April 26, 2000 closure plan approval letter.
25. Additional sampling must be performed until the extent of the contamination is determined.
26. All soil contamination which is present at levels above the cleanup objectives must be remediated in order to achieve clean closure of the unit.
27. If hazardous waste is shipped outside of the United States for treatment or disposal, the Permittee shall comply with the hazardous waste export requirements or 35 IAC 722, Subpart E.
28. The current cost estimate for closure of the temporary unit is \$1,737.80. Pursuant to 35 Ill. Adm. Code 724, Subpart H, the Permittee shall maintain financial assurance for the amount of the approved closure cost estimate and the applicable liability requirements.

Page 6

If you have any questions regarding this permit, please contact Kevin Lesko at 217/524-3271.

Sincerely,

DRAFT

Joyce L. Munie, P.E.
Manager, Permit Section
Bureau of Land

JLM:KL\mls\002062S.WPD

Attachment: Standard Conditions for Remedial Action Plan Permits (RAPPs)
Closure Certification Statement

STANDARD CONDITIONS FOR REMEDIAL ACTION PLAN PERMITS (RAPPs)

1. Pursuant to 35 IAC 702.181, the existence of a RAPP shall not constitute a defense to a violation of the Environmental Protection Act or applicable regulations. Issuance of this permit does not convey property rights or any exclusive privilege. Issuance of this permit does not authorize any injury to property or invasion of other private rights, or infringement of state or local law or regulations.
2. Pursuant to 35 IAC 702.141, the Permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Illinois Environmental Protection Act and is grounds for enforcement action, permit revocation or modification, or denial of a permit renewal application.
3. Any claim of confidentiality must be asserted in accordance with 35 IAC 703.302(e) and 35 IAC 120.
4. This permit is not transferrable to any person or corporation unless the transfer is approved in writing by the Illinois EPA. All permit transfers shall be conducted in accordance with 35 IAC 703.305(c).
5. Pursuant to 35 IAC 702.152(h), if the Permittee becomes aware that they failed to submit relevant facts in the permit application, or submitted incorrect information in a permit application or in any report to the Illinois EPA, the Permittee shall promptly submit such facts or information to the Illinois EPA.
6. This RAPP may be appealed in accordance with the provisions contained in 35 IAC 703.303(f).
7. This RAPP is approved pursuant to 35 IAC 703 and 724. The issuance of this RAPP does not constitute approval of any remediation plan or cleanup objective under 35 IAC 740 or 742.
8. If the Permittee wishes to modify the RAPP, the Permittee shall send an application for permit modification to the address below.

Illinois Environmental Protection Agency
Bureau of Land
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276

The Permittee shall submit the RCRA Remedial Action Plan (RAP) Application form and a detailed description of the requested modification. If the Illinois EPA believes the requested change(s) would significantly change the management of remediation waste, the Illinois EPA shall comply with the draft RAPP and public notice requirements of 35 IAC 703.303(d). The certification of closure, if approved, shall not be considered a significant change requiring public notice under 35 IAC 703.303(d).

9. Pursuant to 35 IAC 702.149, the Permittee shall allow an authorized representative of the Illinois EPA, upon the presentation of credentials and other documents as may be required by law, to:
 - a. Enter at reasonable times upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
 - b. Have access to an copy, at reasonable times, any records that must be kept under the conditions of this permit;
 - c. Inspect at reasonable times any facilities, equipment, practices, or operations regulated or required by this permit;
 - d. Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the appropriate Act, any substances or parameters at any location.
 10. All permit applications, reports, or information submitted to the Illinois EPA, in regards to the RAPP shall be signed and certified in accordance with 35 IAC 702.126.
 11. The Permittee shall comply with the security provisions of 35 IAC 724.101(j)(3), and the emergency coordinator requirements of 35 IAC 724.101(j)(ii).
 12. Pursuant to 35 IAC 724.101(j)(4), the Permittee shall inspect the remediation waste management site for malfunctions, deterioration, operator error, and discharges that may be causing or may lead to a release of hazardous waste constituents to the environment or a threat to human health. Inspections shall be conducted often enough (at least once each operating day) to identify problems in time to correct them before they harm human health or the environment. If a hazard has already occurred, the Permittee shall immediately take remedial action to minimize impacts on human health and the environment. Within 30 days of any releases, the Permittee shall submit to the Illinois EPA, a description of the release and a description of any corrective measures taken.
 13. If waste is taken off-site for treatment or disposal, the Permittee shall comply with the land disposal restrictions contained in 35 IAC, Part 728.
 14. If hazardous waste is shipped off-site, the Permittee shall comply with the manifest, pre-transport, and reporting and record keeping requirements of 35 IAC 722, Subparts B, C, and D. If non-hazardous special waste is shipped off-site, the Permittee shall comply with the manifest requirements of 35 IAC 808.121 and 808.122. In either case, a transporter licensed in accordance with 35 IAC, Section 809 must be used when transporting hazardous or non-hazardous special waste.
 15. If the Permittee wishes to renew this permit, the Permittee shall follow the process for application and issuance of RAPPs found in 35 IAC 703, Subpart H. If the Permittee wishes to continue an activity allowed by this permit after the expiration date of this permit, the Permittee must apply for a new permit at least 30 days before this permit expires, unless permission for a later date has been granted by the Illinois EPA. This permit and all conditions herein will remain in effect beyond the permit's expiration date if the Permittee has submitted a renewal application at least 30 days before this permit expires, and through no fault of the Permittee, the Illinois EPA has not issued a new permit.
 16. Pursuant to 35 IAC 703.305(a), the Permittee shall maintain all data used to complete the RAP application, and any supplemental information the Permittee submits to the Illinois EPA, for a period of at least three years from the date the original RAP application is signed. This information shall be made available to representatives of the Illinois EPA upon request.
- Pursuant to 35 IAC 724.101(j)(13), the Permittee shall maintain records documenting compliance with 35 IAC 724.101(j)(1) through (12) at the facility.
- The Permittee shall demonstrate compliance with 35 IAC 724, Subpart H by providing documentation of financial assurance, as required by 35 IAC 724.251, in at least the amount of the approved closure cost estimate and the applicable liability requirements. Changes in financial assurance mechanisms must be approved by the Illinois EPA in accordance with 35 IAC 724.243. The Permittee shall comply with 35 IAC 724.248 whenever necessary.

Closure Certification Statement

Chemetco
Closure Log B-172

To meet the requirements of 35 Ill. Adm. Code 724.215, this statement is to be completed by both a responsible officer of the owner/operator (as defined in 35 Ill. Adm. Code 702.126) and by an independent licensed professional engineer upon completion of closure. Submit one copy of the certification with original signatures and two additional copies.

The hazardous waste management container treatment, as described in Permit Application, Log No. B-172 has been closed in accordance with the specifications in the approved closure plan. A report documenting that closure has been carried out in accordance with the approved plan is attached.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

USEPA ID Number

Facility Name

Signature of Owner/Operator Date
Responsible Officer

Name and Title of Owner/Operator
Responsible Officer

Signature of Licensed P.E.

Name of Licensed P.E. and Illinois
Licensed Number

Mailing Address of P.E.:

Licensed P.E.'s Seal:

Date

USEPA



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. Box 19276, SPRINGFIELD, ILLINOIS 62794-9276

THOMAS V. SKINNER, DIRECTOR

217/524-3300

July 5, 2000

CERTIFIED MAIL

7099 3400 0006 5939 4567

Chemetco
Attn.: Kim Fock, Manager, Engineering and Maintenance
P.O. Box 67
Hartford, Illinois 62048

Re: 1198010003 -- Madison County
Chemetco, Inc.
ILD048843809
Draft Remedial Action Plan Permit (RAPP) Log No. B-172
RCRA Administrative Record File

Dear Mr. Fock:

Enclosed is a draft Remedial Action Plan Permit (RAPP) and fact sheet for Chemetco. The RAPP would allow Chemetco to construct and operate a temporary on-site container treatment unit. The unit would treat hazardous remediation waste prior to off site disposal.

Under the provisions of 35 Illinois Adm. Code 705.141(d), the tentative draft permit and administrative record must be publicly noticed and made available for public comment for a period of 45 days. The Illinois EPA must also provide an opportunity for a public hearing. Copies of the draft decision and fact sheet are available for review at Hartford Public Library. The Illinois EPA has not scheduled a public hearing at the current time. However, any interested party may request a public hearing. The public comment period will close on August 21, 2000.

During the comment period, the applicant or any interested party may submit comments to the Illinois EPA on the draft permit. At the close of the comment period, the Illinois EPA will prepare a response to significant comments. Comments on the draft permit may be submitted to:

Mara McGinnis, Public Involvement Coordinator
Illinois EPA
Office of Community Relations
1021 North Grand Ave., East
P.O. Box 19276
Springfield, Illinois 62794-9276

GEORGE H. RYAN, GOVERNOR

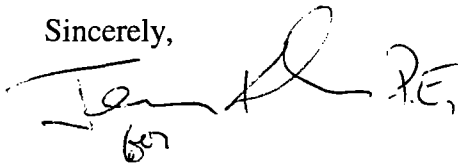
Page 2

The Illinois EPA will issue a final permit after the close of the public comment period unless the Illinois EPA decides to reverse the tentative decision. The appeal process and limitations are addressed in 35 Illinois Adm. Code 705.212.

Within 35 days after the notification of a final permit decision, the permittee may petition the Illinois Pollution Control Board to contest the issuance of the permit. The petition shall include a statement of the reasons supporting a review, including demonstration that any issues raised in the petition, were previously raised during the public comment period. In all other respects the petition shall be in accordance with the requirements for permit appeals as set forth in 35 IAC Part 105. Nothing in this paragraph is intended to restrict appeal rights under Section 40(b) of the Environmental Protection Act (35 IAC 705.212(a)).

If you have any questions concerning this draft permit, please contact Kevin D. Lesko at 217/524-3271.

Sincerely,



Joyce L. Munie, P.E.
Manager, Permit Section
Bureau of Land

JLM:KL\mls\002064S.WPD

Enclosures: Fact Sheet
Draft RCRA RAP Permit

cc: RCRA Administrative Record File
CSD Environmental Services -- Cindy S. Davis, P.G.
Illinois Attorney General's Office -- Jim Morgan
USEPA Region V -- Harriet Croke
USEPA Region V -- Pat Kuefler, DRE-9J ✓



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DIVISION OF AIR POLLUTION CONTROL
STATE OF ILLINOIS

Slag Screening

and

Processing Plant

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Chemetco, Inc.

November 1989

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Slag Screening

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DIVISION OF AIR POLLUTION CONTROL
STATE OF ILLINOIS

and

Processing Plant

Chemetco, Inc.

November 1989

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1.0 INTRODUCTION

This document is Chemetco Inc.'s application for an air construction/operating permit for the company's intended screening operation at the facility site near Hartford, Illinois. The smelter is located in a rural area which is zoned for heavy industrial use. The company employs approximately 140 people. While Chemetco has operated the smelter continuously since 1969, the screening operation for air-cooled slag will be a new emissions source.

The following sections of this document are as follows: Section 2.0 contains appropriate forms and attachments required by the Agency for a construction/operating permit. Section 3.0 is the Process Description required as part of the application detailing raw material and finished products. Section 4.0 discusses the fugitive emission control plan for the screening. Section 5.0 presents the engineering calculations and the emission estimates for particulates in addition to relating these to the Chemetco facility overall. It will be demonstrated that the addition of the screening operation will not constitute a major source and the company will remain in compliance with the allowable emission rates and all applicable rules and regulations.

2.0 AIR POLLUTION CONTROL FORMS AND ATTACHMENTS



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
2200 CHURCHILL ROAD
SPRINGFIELD, ILLINOIS 62706

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter III 1/2, Section 1039. Disclosure of this information is required under that Section. Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

APPLICATION FOR A PERMIT (A) <input checked="" type="checkbox"/> CONSTRUCT <input checked="" type="checkbox"/> OPERATE	FOR AGENCY USE ONLY I. D. NO. _____ PERMIT NO. _____ DATE _____
NAME OF EQUIPMENT TO BE CONSTRUCTED OR OPERATED <u>Copper Slag Screening Operation</u>	

1a. NAME OF OWNER: Chemetco, Inc.		2a. NAME OF OPERATOR: Chemetco, Inc.	
1b. STREET ADDRESS OF OWNER: P.O. Box 2187		2b. STREET ADDRESS OF OPERATOR: P.O. Box 2187	
1c. CITY OF OWNER: Alton		2c. CITY OF OPERATOR: Alton	
1d. STATE OF OWNER: Illinois	1e. ZIP CODE: 62002	2d. STATE OF OPERATOR: Illinois	2e. ZIP CODE: 62002

3a. NAME OF CORPORATE DIVISION OR PLANT: Chmetco, Inc.		3b. STREET ADDRESS OF EMISSION SOURCE: Rt. 3 and Oldenberg Road		
3c. CITY OF EMISSION SOURCE: near hartford	3d. LOCATED WITHIN CITY LIMITS: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	3e. TOWNSHIP: Choteau	3f. COUNTY: Madison	3g. ZIP CODE: 62048

4. ALL CORRESPONDENCE TO: (TITLE AND/OR NAME OF INDIVIDUAL) Michelle Reznack Env. Manager	5. TELEPHONE NUMBER FOR AGENCY TO CALL: 618-254-4381 Ext. 219
6. ADDRESS FOR CORRESPONDENCE: (CHECK ONLY ONE) <input checked="" type="checkbox"/> OWNER: <input type="checkbox"/> OPERATOR <input type="checkbox"/> EMISSION SOURCE	7. YOUR DESIGNATION FOR THIS APPLICATION: (C) SLAG SCREEN

8. THE UNDERSIGNED HEREBY MAKES APPLICATION FOR A PERMIT AND CERTIFIES THAT THE STATEMENTS CONTAINED HEREIN ARE TRUE AND CORRECT, AND FURTHER CERTIFIES THAT ALL PREVIOUSLY SUBMITTED INFORMATION REFERENCED IN THIS APPLICATION REMAINS TRUE, CORRECT AND CURRENT, BY AFFIXING HIS SIGNATURE HERETO HE FURTHER CERTIFIES THAT HE IS AUTHORIZED TO EXECUTE THIS APPLICATION.	
AUTHORIZED SIGNATURE(S): (D) BY <u>David A. Hoff</u> SIGNATURE David A. Hoff TYPED OR PRINTED NAME OF SIGNER President TITLE OF SIGNER	NOV 20 1989 11/17/89 ENVIRONMENTAL PROTECTION AGENCY DIVISION OF AIR POLLUTION CONTROL STATE OF ILLINOIS _____ SIGNATURE _____ TYPED OR PRINTED NAME OF SIGNER _____ TITLE OF SIGNER
(A) THIS FORM IS TO PROVIDE THE AGENCY WITH GENERAL INFORMATION ABOUT THE EQUIPMENT TO BE CONSTRUCTED OR OPERATED. THIS FORM MAY ONLY BE USED TO REQUEST ONE TYPE OF PERMIT - CONSTRUCTION OR OPERATION - AND NOT BOTH.	
(B) ENTER THE GENERIC NAME OF THE EQUIPMENT TO BE CONSTRUCTED OR OPERATED. THIS NAME WILL APPEAR ON THE PERMIT WHICH MAY BE ISSUED PURSUANT TO THIS APPLICATION. THIS FORM MUST BE ACCOMPANIED BY OTHER APPLICABLE FORMS AND INFORMATION.	
(C) PROVIDE A DESIGNATION IN ITEM 7 ABOVE WHICH YOU WOULD LIKE THE AGENCY TO USE FOR IDENTIFICATION OF YOUR EQUIPMENT. YOUR DESIGNATION WILL BE REFERENCED IN CORRESPONDENCE FROM THIS AGENCY RELATIVE TO THIS APPLICATION. YOUR DESIGNATION <u>MUST NOT</u> EXCEED TEN (10) CHARACTERS.	
(D) THIS APPLICATION MUST BE SIGNED IN ACCORDANCE WITH PCB REGS., CHAPTER 2, PART 1, RULE 103(a)(4) OR 103(b)(5) WHICH STATES: "ALL APPLICATIONS AND SUPPLEMENTS THERETO SHALL BE SIGNED BY THE OWNER AND OPERATOR OF THE EMISSION SOURCE OR AIR POLLUTION CONTROL EQUIPMENT, OR THEIR AUTHORIZED AGENT, AND SHALL BE ACCOMPANIED BY EVIDENCE OF AUTHORITY TO SIGN THE APPLICATION."	
IF THE OWNER OR OPERATOR IS A CORPORATION, SUCH CORPORATION MUST HAVE ON FILE WITH THE AGENCY A CERTIFIED COPY OF A RESOLUTION OF THE CORPORATION'S BOARD OF DIRECTORS AUTHORIZING THE PERSONS SIGNING THIS APPLICATION TO CAUSE OR ALLOW THE CONSTRUCTION OR OPERATION OF THE EQUIPMENT TO BE COVERED BY THE PERMIT.	

9. DOES THIS APPLICATION CONTAIN A PLOT PLAN/MAP:

☒ YES ☐ NO

IF A PLOT PLAN/MAP HAS PREVIOUSLY BEEN SUBMITTED, SPECIFY:

AGENCY I.D. NUMBER _____

APPLICATION NUMBER _____

IS THE APPROXIMATE SIZE OF APPLICANT'S PREMISES LESS THAN 1 ACRE?

☐ YES ☒ NO: SPECIFY 40 ACRES

10. DOES THIS APPLICATION CONTAIN A PROCESS FLOW DIAGRAM(S) THAT ACCURATELY AND CLEARLY REPRESENTS CURRENT PRACTICE.

☒ YES ☐ NO

11a. WAS ANY EQUIPMENT, COVERED BY THIS APPLICATION, OWNED OR CONTRACTED FOR, BY THE APPLICANT PRIOR TO APRIL 14, 1972:

☐ YES ☒ NO

IF "YES", ATTACH AN ADDITIONAL SHEET, EXHIBIT A, THAT:

- (a) LISTS OR DESCRIBES THE EQUIPMENT
- (b) STATES WHETHER THE EQUIPMENT WAS IN COMPLIANCE WITH THE RULES AND REGULATIONS GOVERNING THE CONTROL OF AIR POLLUTION PRIOR TO APRIL 14, 1972.

11b. HAS ANY EQUIPMENT, COVERED BY THIS APPLICATION, NOT PREVIOUSLY RECEIVED AN OPERATING PERMIT:

☒ YES ☐ NO

IF "YES", ATTACH AN ADDITIONAL SHEET, EXHIBIT B, THAT:

- (a) LISTS OR DESCRIBES THE EQUIPMENT
- (b) STATES WHETHER THE EQUIPMENT
 - (i) IS ORIGINAL OR ADDITIONAL EQUIPMENT
 - (ii) REPLACES EXISTING EQUIPMENT, OR
 - (iii) MODIFIES EXISTING EQUIPMENT
- (c) PROVIDES THE ANTICIPATED OR ACTUAL DATES OF THE COMMENCEMENT OF CONSTRUCTION AND THE START-UP OF THE EQUIPMENT

12. IF THIS APPLICATION INCORPORATES BY REFERENCE A PREVIOUSLY GRANTED PERMIT(S), HAS FORM APC-210, "DATA AND INFORMATION-- INCORPORATION BY REFERENCE" BEEN COMPLETED.

☐ YES ☐ NO N/A

13. DOES THE STARTUP OF AN EMISSION SOURCE COVERED BY THIS APPLICATION PRODUCE AIR CONTAMINANT EMISSION IN EXCESS OF APPLICABLE STANDARDS:

☐ YES ☐ NO N/A

IF "YES," HAS FORM APC-203, "OPERATION DURING STARTUP" BEEN COMPLETED FOR THIS SOURCE:

☐ YES ☐ NO N/A

14. DOES THIS APPLICATION REQUEST PERMISSION TO OPERATE AN EMISSION SOURCE DURING MALFUNCTIONS OR BREAKDOWNS:

☐ YES ☒ NO

IF "YES," HAS FORM APC-204, "OPERATION DURING MALFUNCTION AND BREAKDOWN" BEEN COMPLETED FOR THIS SOURCE:

☐ YES ☐ NO

15. IS AN EMISSION SOURCE COVERED BY THIS APPLICATION SUBJECT TO A FUTURE COMPLIANCE DATE:

☐ YES ☒ NO

IF "YES," HAS FORM APC-202, "COMPLIANCE PROGRAM & PROJECT COMPLETION SCHEDULE," BEEN COMPLETED FOR THIS SOURCE:

☐ YES ☐ NO

16. DOES THE FACILITY COVERED BY THIS APPLICATION REQUIRE AN EPISODE ACTION PLAN (REFER TO GUIDELINES FOR EPISODE ACTION PLANS):

☒ YES ☐ NO Chemetco does, however this operation does not.

17. WAS THIS OPERATION THE SUBJECT OF A VARIANCE PETITION FILED WITH THE ILLINOIS POLLUTION CONTROL BOARD ON OR BEFORE JUNE 13, 1972:

☐ YES ☒ NO

IF "YES," CITE: PCB NUMBER(S) _____, DATE OF BOARD ORDER _____

WAS CONSTRUCTION OR MODIFICATION OF EQUIPMENT, SUFFICIENT TO ACHIEVE COMPLIANCE WITH THE "RULES AND REGULATIONS GOVERNING THE CONTROL OF AIR POLLUTION" EFFECTIVE PRIOR TO APRIL 14, 1972, COMMENCED PRIOR TO APRIL 14, 1972:

☐ YES ☒ NO

IF "YES," EXPLAIN IN DETAIL, AND IDENTIFY EXPLANATION AS EXHIBIT D.

18. LIST AND IDENTIFY ALL FORMS, EXHIBITS, AND OTHER INFORMATION SUBMITTED AS PART OF THIS APPLICATION. INCLUDE THE PAGE NUMBERS ON EACH ITEM (ATTACH ADDITIONAL SHEETS IF NECESSARY):

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ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
STATE OF ILLINOIS

TOTAL NUMBER OF PAGES _____

Exhibit A - APC Form 200

Not required.

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**ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
STATE OF ILLINOIS**

Exhibit B - APC Form 200

A. Equipment Description

The process equipment consists of a feeder and hopper which feed via the main conveyor the coarse slag screen. The main conveyor has a magnetic head pulley which will skim off any metallic scrap before the 1st screen. Two coarse slag products 10" x 2-1/4" and 2-14" x 1/2" slag are conveyed to stockpile at this screen. The fine slag is then conveyed over the second screen. The 2nd screen provides two products. These two products which are conveyed to stockpile are 1/2" x 3/16" chips and 3/16" minus sand. These slag products are sold as construction aggregate.

B. Equipment Basis

This plant will be made up of used equipment from several sources. None of the equipment required for this operation has previously been used at the Chemetco site.

C. Dates

Anticipated construction start date:

January 2, 1990

Anticipated equipment start-up date:

January 15, 1990

MINUTES OF MEETING OF DIRECTORS OF CHEMETCO INC.

The Board of Chemetco Inc., a Delaware corporation, met at 103 Grand rue, Luxembourg, S.D. of L. on the 15th. day of september 1987 at 11 am, pursuant to waiver of notice by all the directors of said corporation.

The following directors of the corporation were being present :

John Suarez.

Iloy Cueto

Robert Reckinger .

Upon motion duly made, seconded and unanimously carried, Robert Reckinger was chosen as Chairman of the meeting and Iloy Cueto was chosen as secretary of the meeting.

Thereupon, the board proceed with the election of the officers, to serve until the next annual meeting of the stockholders or until their successors are elected and qualified.

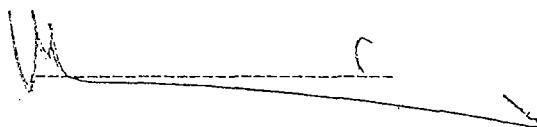
Thereupon, on motion duly made and seconded and unanimously carried, the following named persons were elected officer of the corporation to serve until the next annual meeting or until their respective successors are elected and qualified :

Dave Hoff, President.

Cheng Chang, Vice-president .

Chris Tichenor, Treasurer .

There being no further or other business to come before the meeting, on motion duly made, seconded and carried the meeting is adjourned.



ADDENDUM TO APC 200 - FOR CONSTRUCTION PERMITS ONLY

19.a Certificate by Applicant (s)

P.A. 82-682 amended Section 39(c) of the Illinois Environmental Protection Act provide in part:

"...No permit for the development or construction of a new facility, other than a regional pollution control facility, may be granted by the Agency unless the applicant submits proof to the Agency that the applicant has secured all necessary zoning approvals from the unit of local government having zoning jurisdiction over the proposed facility." (emphasis added)

Accordingly, to demonstrate compliance with the requirements of P.A. 82-682, I hereby certify that:

(a) I/We have secured all necessary zoning approvals from the unit of local government having zoning jurisdiction over the proposed facility, or (b) that said facility complies with local zoning requirements and further approval is not required, or (c) no unit of local government has zoning jurisdiction over the proposed facility.

19.b. NAME OF APPLICANT FOR PERMIT OR AUTHORIZATION TO CONSTRUCT _____

Chemetco

Route 3 & Oldenberg Road, Hartford, IL 62048
STREET CITY STATE ZIP

SIGNATURE David G. Hoff

TITLE President ORGANIZATION Chemetco



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
2200 CHURCHILL ROAD
SPRINGFIELD, ILLINOIS 62706

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 1/2, Section 1039. Disclosure of this information is required under that Section. Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

*DATA AND INFORMATION
PROCESS EMISSION SOURCE

*THIS INFORMATION FORM IS TO BE COMPLETED FOR AN EMISSION SOURCE OTHER THAN A FUEL COMBUSTION EMISSION SOURCE OR AN INCINERATOR. A FUEL COMBUSTION EMISSION SOURCE IS A FURNACE, BOILER, OR SIMILAR EQUIPMENT USED PRIMARILY FOR PRODUCING HEAT OR POWER BY INDIRECT HEAT TRANSFER. AN INCINERATOR IS AN APPARATUS IN WHICH REFUSE IS BURNED.

1. NAME OF PLANT OWNER: Chemetco, Inc.	2. NAME OF CORPORATE DIVISION OR PLANT (IF DIFFERENT FROM OWNER): same
3. STREET ADDRESS OF EMISSION SOURCE: Rt 3 and Oldenberg Road	4. CITY OF EMISSION SOURCE: near Hartford, Illinois

GENERAL INFORMATION		
5. NAME OF PROCESS: Copper Slag Screening Plant	6. NAME OF EMISSION SOURCE EQUIPMENT: Copper Slag Processing Equipment	
7. EMISSION SOURCE EQUIPMENT MANUFACTURER: various	8. MODEL NUMBER: N/A	9. SERIAL NUMBER: N/A
10. FLOW DIAGRAM DESIGNATION(S) OF EMISSION SOURCE: Various points in the screening plant designated $\Delta 1$ to $\Delta 15$.		
11. IDENTITY(S) OF ANY SIMILAR SOURCE(S) AT THE PLANT OR PREMISES NOT COVERED BY THE FORM (IF THE SOURCE IS COVERED BY ANOTHER APPLICATION, IDENTIFY THE APPLICATION): BAGHOUSE2		
12. AVERAGE OPERATING TIME OF EMISSION SOURCE: 6.5 HRS/DAY 5 DAYS/WK 52 WKS/YR	13. MAXIMUM OPERATING TIME OF EMISSION SOURCE: 8 HRS/DAY 5 DAYS/WK 52 WKS/YR	
14. PERCENT OF ANNUAL THROUGHPUT: DEC-FEB 25 % MAR-MAY 25 % JUN-AUG 25 % SEPT-NOV 25 %		

INSTRUCTIONS
1. COMPLETE THE ABOVE IDENTIFICATION AND GENERAL INFORMATION SECTION.
2. COMPLETE THE RAW MATERIAL, PRODUCT, WASTE MATERIAL, AND FUEL USAGE SECTIONS FOR THE PARTICULAR SOURCE EQUIPMENT. COMPOSITIONS OF MATERIALS MUST BE SUFFICIENTLY DETAILED TO ALLOW DETERMINATION OF THE NATURE AND QUANTITY OF POTENTIAL EMISSIONS. IN PARTICULAR, THE COMPOSITION OF PAINTS, INKS, ETC., AND ANY SOLVENTS MUST BE FULLY DETAILED.
3. EMISSION AND EXHAUST POINT INFORMATION MUST BE COMPLETED, UNLESS EMISSIONS ARE EXHAUSTED THROUGH AIR POLLUTION CONTROL EQUIPMENT.
4. OPERATING TIME AND CERTAIN OTHER ITEMS REQUIRE BOTH AVERAGE AND MAXIMUM VALUES.
5. FOR GENERAL INFORMATION REFER TO "GENERAL INSTRUCTIONS FOR PERMIT APPLICATIONS," APC-201.

DEFINITIONS
AVERAGE - THE VALUE THAT SUMMARIZES OR REPRESENTS THE GENERAL CONDITION OF THE EMISSION SOURCE, OR THE GENERAL STATE OF PRODUCTION OF THE EMISSION SOURCE. SPECIFICALLY: AVERAGE OPERATING TIME - ACTUAL TOTAL HOURS OF OPERATION FOR THE PRECEDING TWELVE MONTH PERIOD. AVERAGE RATE - ACTUAL TOTAL QUANTITY OF "MATERIAL" FOR THE PRECEDING TWELVE MONTH PERIOD, DIVIDED BY THE AVERAGE OPERATING TIME. AVERAGE OPERATION - OPERATION TYPICAL OF THE PRECEDING TWELVE MONTH PERIOD, AS REPRESENTED BY AVERAGE OPERATING TIME AND AVERAGE RATES.
MAXIMUM - THE GREATEST VALUE ATTAINABLE OR ATTAINED FROM THE EMISSION SOURCE, OR THE PERIOD OF GREATEST OR UTMOST PRODUCTION OF THE EMISSION SOURCE. SPECIFICALLY: MAXIMUM OPERATING TIME - GREATEST EXPECTED TOTAL HOURS OF OPERATIONS FOR ANY TWELVE MONTH PERIOD. MAXIMUM RATE - GREATEST QUANTITY OF "MATERIAL" EXPECTED PER ANY ONE HOUR OF OPERATION. MAXIMUM OPERATION - GREATEST EXPECTED OPERATION, AS REPRESENTED BY MAXIMUM OPERATING TIME AND MAXIMUM RATES.

RAW MATERIAL INFORMATION		
NAME OF RAW MATERIAL	AVERAGE RATE PER IDENTICAL SOURCE	MAXIMUM RATE PER IDENTICAL SOURCE
20a. Air cooled copper slag	b. 250,000 LB/HR	c. 277,780 LB/HR
21a.	b. LB/HR	c. LB/HR
22a.	b. LB/HR	c. LB/HR
23a.	b. LB/HR	c. LB/HR
24a.	b. LB/HR	c. LB/HR

PRODUCT INFORMATION		
NAME OF PRODUCT	AVERAGE RATE PER IDENTICAL SOURCE	MAXIMUM RATE PER IDENTICAL SOURCE
30a. Slag oversize fill	b. 6,260 LB/HR	c. 6,940 LB/HR
31a. Metallic scrap	b. 5,000 LB/HR	c. 5,560 LB/HR
32a. 10" x 2-1/4" Aggregate fill	b. 33,760 LB/HR	c. 37,500 LB/HR
33a. 2-1/4" x 1/2" Aggregate rock	b. 130,000 LB/HR	c. 144,440 LB/HR
34a. 1/2" x 3/16" Aggregate chips	b. 25,060 LB/HR	c. 27,840 LB/HR
- 3/16" sand	49,920	55,500

WASTE MATERIAL INFORMATION		
NAME OF WASTE MATERIAL	AVERAGE RATE PER IDENTICAL SOURCE	MAXIMUM RATE PER IDENTICAL SOURCE
40a. NONE	b. LB/HR	c. LB/HR
41a.	b. LB/HR	c. LB/HR
42a.	b. LB/HR	c. LB/HR
43a.	b. LB/HR	c. LB/HR
44a.	b. LB/HR	c. LB/HR

*FUEL USAGE INFORMATION		
FUEL USED	TYPE	HEAT CONTENT
50a. NATURAL GAS <input type="checkbox"/>	b. _____	c. 1000 BTU/SCF
OTHER GAS <input type="checkbox"/>	N/A	BTU/SCF
OIL <input type="checkbox"/>		BTU/GAL
COAL <input type="checkbox"/>		BTU/LB
OTHER <input type="checkbox"/>		BTU/LB
d. AVERAGE FIRING RATE PER IDENTICAL SOURCE: BTU/HR		e. MAXIMUM FIRING RATE PER IDENTICAL SOURCE: BTU/HR

*THIS SECTION IS TO BE COMPLETED FOR ANY FUEL USED DIRECTLY IN THE PROCESS EMISSION SOURCE, E.G. GAS IN A DRYER, OR COAL IN A MELT FURNACE.

***EMISSION INFORMATION**

51. NUMBER OF IDENTICAL SOURCES (DESCRIBE AS REQUIRED):

AVERAGE OPERATION

CONTAMINANT	CONCENTRATION OR EMISSION RATE PER IDENTICAL SOURCE		METHOD USED TO DETERMINE CONCENTRATION OR EMISSION RATE
PARTICULATE MATTER	52a. GR/SCF	b. 3.62 LB/HR	c. USEPA AP-42 Emission Calculation
CARBON MONOXIDE	53a. PPM (VOL)	b. LB/HR	c.
NITROGEN OXIDES	54a. PPM (VOL)	b. LB/HR	c.
ORGANIC MATERIAL	55a. PPM (VOL)	b. LB/HR	c.
SULFUR DIOXIDE	56a. PPM (VOL)	b. LB/HR	c.
**OTHER (SPECIFY) Lead	57a. PPM (VOL)	b. .0261 LB/HR	c. From percentage of lead in slag

MAXIMUM OPERATION

CONTAMINANT	CONCENTRATION OR EMISSION RATE PER IDENTICAL SOURCE		METHOD USED TO DETERMINE CONCENTRATION OR EMISSION RATE
PARTICULATE MATTER	58a. GR/SCF	b. 3.89 LB/HR	c. USEPA AP-42 Emission Calculation
CARBON MONOXIDE	59a. PPM (VOL)	b. LB/HR	c.
NITROGEN OXIDES	60a. PPM (VOL)	b. LB/HR	c.
ORGANIC MATERIAL	61a. PPM (VOL)	b. LB/HR	c.
SULFUR DIOXIDE	62a. PPM (VOL)	b. LB/HR	c.
**OTHER (SPECIFY)	63a. PPM (VOL)	b. .028 LB/HR	c. From Percentage of lead in slag

* ITEMS 52 THROUGH 63 NEED NOT BE COMPLETED IF EMISSIONS ARE EXHAUSTED THROUGH AIR POLLUTION CONTROL EQUIPMENT.

**"OTHER" CONTAMINANT SHOULD BE USED FOR AN AIR CONTAMINANT NOT SPECIFICALLY NAMED ABOVE. POSSIBLE OTHER CONTAMINANTS ARE ASBESTOS, BERYLLIUM, MERCURY, VINYL CHLORIDE, LEAD, ETC.

*****EXHAUST POINT INFORMATION**

64. FLOW DIAGRAM DESIGNATION(S) OF EXHAUST POINT:

N/A

65. DESCRIPTION OF EXHAUST POINT (LOCATION IN RELATION TO BUILDINGS, DIRECTION, HOODING, ETC.):

66. EXIT HEIGHT ABOVE GRADE:	67. EXIT DIAMETER:
68. GREATEST HEIGHT OF NEARBY BUILDINGS:	69. EXIT DISTANCE FROM NEAREST PLANT BOUNDARY:
FT	FT
AVERAGE OPERATION	MAXIMUM OPERATION
70. EXIT GAS TEMPERATURE:	72. EXIT GAS TEMPERATURE:
°F	°F
71. GAS FLOW RATE THROUGH EACH EXIT:	73. GAS FLOW RATE THROUGH EACH EACH EXIT:
ACFM	ACFM

***THIS SECTION SHOULD NOT BE COMPLETED IF EMISSIONS ARE EXHAUSTED THROUGH AIR POLLUTION CONTROL EQUIPMENT.

APC 220 - List of Process Emission Sources

- 1) Loader drop-off to feed hopper (batch)
- 2) Oversize from hopper to pile
- 3) Feed from hopper to Main conveyor
- 4) Metallic scrap to scrap pile
- 5) Slag from Main conveyor to No. 1 Screen
- 6) 10" x 2-1/4" slag from No. 1 screen to conveyor
- 7) 10" x 2-1/4" slag from conveyor to stockpile
- 8) 2-1/4" x 1/2" slag from No.1 screen to conveyor
- 9) 2-1/4" x 1/2" slag for portable conveyor to stockpile
- 10) Undersize from No. 1 screen to conveyor
- 11) Undersize from Conveyor to no. 2 screen
- 12) 1/2" x 3/16" chips from No. 2 screen to conveyor
- 13) 1/2" x 3/16" chips from conveyor to stockpile
- 14) -3/16" sand from No. 2 screen to conveyor
- 15) -3/16" sand from conveyor to stockpile

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
2200 CHURCHILL ROAD
SPRINGFIELD, ILLINOIS 62706

OPERATING PROGRAM FOR FUGITIVE PARTICULATE CONTROL
REQUIRED BY RULE 203(f)(2) through (4)

1. Name of Facility: Chemetco, Inc.
Street Address: Rt. 3 & Oldenberg Road
City: near Hartford, Illinois
Township: Choteau County: Madison Zip Code: 62048
2. Name of Owner or Operator: Chemetco, Inc.
Address of Owner or Operator: P.O. Box 2187
Alton, Illinois 62002
3. Submit a scale map showing all storage piles, conveyor loading operations, storage pile access roads, normal traffic roads, parking facilities, location of unloading and transporting operations with pollution control equipment.
See Process Drawing in Section 3.
4. Do storage piles contain a total of more than 260,000 tons of material in any calendar year? ☒ Yes ☐ No
Normally storage piles of this size or greater are likely to emit 50 tons per year or more particulates.
* See attachment
5. If answer to item #4 is yes, please submit the following information:
 - a) Total amount of material in storage piles: See attachment tons
 - b) Submit attached sheets describing:
 - i) Detailed operating procedures and control methods by which fugitive particulates from these storage piles will be minimized during loading, unloading, pile maintenance, and wind erosion. How often will these piles be treated with surfacting agent? Name the type and concentration of surfactant that will be used.
 - ii) Type of control methods used for fugitive particulate emissions from conveyor loading operations and normal traffic pattern roads serving these storage piles. If surfacting agent is used state type and concentration of surfacting agent and frequency of its use.
 - iii) Type of control methods used for fugitive particulate emissions from all paved or unpaved parking lots and normal traffic pattern roads at this facility. If roads are paved indicate footage of roads that will be paved and how frequently these roads will be cleaned.

6. Does this facility have any of the following sources?

For each source marked yes, attach additional sheet describing the type of control methods that will be used to control fugitive particulate emissions. If surfactant is used state the type and concentration of surfactant and frequency of its application. If the roads and parking lots are paved, state the frequency of cleaning.

- | | | |
|---|--------------|-------------|
| a) Crushers | ___ Yes | <u>X</u> No |
| b) Grinding Mills | ___ Yes | <u>X</u> No |
| c) Screening Operations | <u>X</u> Yes | ___ No |
| d) Bucket Elevators | ___ Yes | <u>X</u> No |
| e) Conveyors | <u>X</u> Yes | ___ No |
| f) Conveyor transfer points | <u>X</u> Yes | ___ No |
| g) Bagging Operations | ___ Yes | <u>X</u> No |
| h) Storage Bins | ___ Yes | <u>X</u> No |
| i) Fine Product truck and trailer loading operations | ___ Yes | <u>X</u> No |
| j) Unloading and transporting operations of materials collected by pollution control equipment. | ___ Yes | <u>X</u> No |
| k) Unpaved normal traffic roads | <u>X</u> Yes | ___ No |
| l) Paved normal traffic roads | ___ Yes | <u>X</u> No |
| m) Unpaved parking lots | ___ Yes | <u>X</u> No |
| n) Paved parking lots | ___ Yes | <u>X</u> No |

7. Vehicular Miles Travel Information: This information is to be determined by number of cars times distant travel for following roads:

- i) Traffic on unpaved normal traffic roads in ** miles per year.
- ii) Traffic on paved normal traffic roads in ** miles per year.
- iii) Traffic on unpaved parking lots ** miles per year.
- iv) Traffic on paved parking lots ** miles per year.

8. Is this fugitive particulate control program implemented at present? (Please note that the Rule 203(f) requires that this program should be implemented by 12/31/82). ___ Yes *** No

KEEP ONE COPY FOR YOUR FILES AND RETURN TWO COPIES TO: BHARAT MATHUR, MANAGER AIR PERMITS AT ADDRESS GIVEN ON THE FIRST PAGE.

AUTHORIZED SIGNATURE(S)

BY _____ DATE _____

David A. Hoff
TYPED OR PRINTED NAME OF SIGNER

President
TITLE OF SIGNER

HBD:ba/sp5779c/1-2

APC-391 Attachment

Question No. 4

* This material has a specific gravity of approximately 3.8 or greater and therefore is extremely heavy. Only the very smallest particles could become airborne.

Question No. 5 a)

In the product storage piles there will only be a maximum of 10,000 tons each, 40,000 tons total. For the raw material storage pile, the current facility slag pile, there is an estimated 900,000 tons. Of course, this will decrease daily as the material is processed.

b) i) See Section 4, Fugitive Emission Control

ii) See Section 4

iii) See Section 4

Question No. 7

** See Emission Calculations in Section 5.

Question No. 8

*** This same form has been filed as part of the construction permit application for the Wheelabrator Jet III Baghouse at Chemetco. Many of the same techniques for dust control are already practiced for other areas of the plant. In relation to the new product stockpiles, this fugitive particulate control program has not previously been implemented.

3.0 PROCESS DESCRIPTION

3.1 Screening Process

Chemetco Inc. intends to produce graded construction aggregate using Chemetco's secondary copper smelted slag. The sizes that will be produced are:

1. Plus 10" oversize
2. Minus 10" metallic scrap
3. 10" x 2-1/4" slag
4. 2-14" x 1/2" slag
5. 1/2" x 3/16" slag
6. Minus 3/16" sand

The process that will be used to produce the graded construction aggregate is typical of the crushed stone industry except that the process does not use crushers.

The slag will be fed into the hopper with grizzly using a front-end loader. The material that will not pass through the grizzly, the +10" size, passes of the top of the grizzly into the oversize stockpile. The minus 10" slag is conveyed over a magnetic head pulley. Metallic scrap drops into a stockpile and is removed for pyrometallurgical processing. The non-magnetic slag passes over the first vibrating screen. The first vibrating screen splits the slag into three sizes, 10" x 2-1/4", 2-1/4" x 1/2" and 1/2" x 0. The first two products are conveyed to stockpiles and the third is conveyed to the second vibrating screen. The second vibrating screen splits the 1/2" x 0 slag into two sizes, 1/2" x 3/16" and 3/16" sand. These two products are conveyed to a stockpile. The finished products are then loaded by front-end loader into contractors' trucks and sold for construction aggregate.

3.2 Slag Production

Raw materials containing copper, lead, zinc, and iron are introduced into the top blown rotary converters (TBRC's) and heated to a molten state. Lime, CaCO_3 ,

is added to the molten mixture resulting in two products: "black copper: containing approximately 70-75% pure copper, and a slag containing mostly FeO , SiO_2 , CaO and Al_2O_3 which rises to the top of the molten bath.

Process control analyses are then run to determine if recoverable metals have been effectively driven into the black copper. If the slag contains significant levels of recoverable metals, additional lime is added and the smelting process extended until pre-determined levels of efficiency in metal recovery are achieved. Once effective recovery has been completed, the molten smelting slag is poured off the top from the TBRC's into a Kress slag hauler and transported from the production foundry. The slag is presently granulated; historically it was poured into slag pits and allowed to slow air cool forming what has been called "chunky" slag.

Slag is also produced in the refining process from refinement of the black copper. Conducted in the TBRCs refining consists primarily of the injection of silicate materials and oxygen into the molten black copper until a high purity copper (98.9-99.5%) is produced. The pure molten copper is tapped off and cast into anodes. The remaining refinery slag is then smelted to extract black copper, lead and tin, producing a slag poor in recoverable metals which previously was slow cooled and is now granulated.

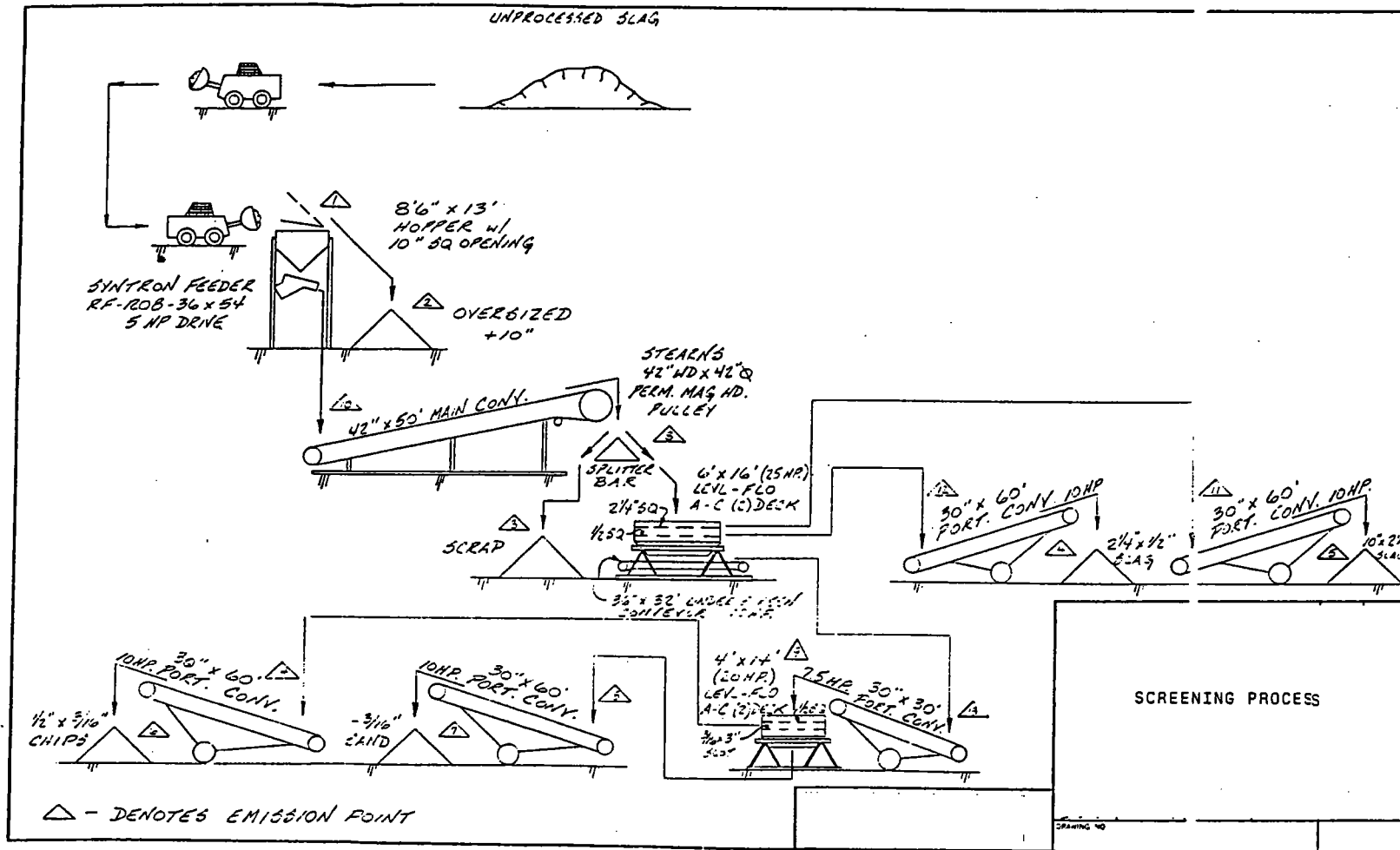


FIGURE 3.1 - PROCESS FLOW DIAGRAM

TABLE 3.1 - CHEMICAL SLAG ANALYSIS

<u>Element</u>	<u>Content by Weight</u>
Copper	0.46%
Lead	0.72
Tin	0.23
Silicon Dioxide	32.69
Zinc	6.24
Calcium Oxide	4.12
Aluminum Trioxide	5.90
Iron	31.86
Cadmium	0.001
Water	0.00
Dioxins	*
Furans	*

TABLE 3.2 - PHYSICAL SLAG ANALYSIS

<u>Specification</u>	<u>Percent by Weight</u>
Metallics	2.00%
+8"	2.50
8" x 2-1/4"	11.0
2-1/4" x 1"	30.0
1" x 1/2"	22.0
1/2" x 3/16"	10.0
3/16" x 0"	20.0

* There were no dioxins or furans found in the slag per the Enesco-Cal Lab report. This analysis was performed in conjunction with USEPA in early 1987. The report is attached in Appendix D.

3.3 Slag Character

Extensive chemical and physical analysis has been made of the slag material produced by Chemetco's converters. In addition to the chemical analysis shown in Table 3.1 and size analysis shown in Table 3.2, Chemetco has tested the material in conjunction with IEPA, Division of Land Pollution Control for hazardous toxicity; USEPA for dioxins and furans; IDOT for physical characteristics applicable to road construction; and several Universities and contract firms simulating hypothetical situations the slag may encounter.

IEPA has concluded that the slag is not a RCRA hazardous waste and USEPA has declared it is free of dioxins and furans. While IDOT's testing procedures are ongoing and periodic, results to-date indicate the slag is suitable in several applications and once sized, surpasses specifications by wide margins. The appendices contain supporting documentation.

4.0 FUGITIVE EMISSION CONTROL PROGRAM

Engineering calculations showing the estimated emissions are shown in Section 5. To minimize these as much as possible, Chemetco will adhere to the following control plan at the facility.

4.1 Stockpiles

In addition to the raw material stockpile which Chemetco has accumulated over the past 11 years, there will be six other piles associated with slag management and screening. These are

- o metallics,
- o +10 oversize,
- o 10" x 2-1/4" roadfill,
- o 2-1/4" x 1/2" concrete aggregate,
- o 1/2" x 3/16" asphalt chip and seal,
- o 3/16" aggregate sand.

Of course, the metallics will be immediately returned to Chemetco's smelter process for recovery. The +10 oversized material, if not sold as fill, will be stockpiled for future processing at a later date. It is estimated there is a small percentage of this size. The remaining stockpiles will be sold as produced with stockpile maximums of one week's production.

Chemetco estimates that fugitive emissions from the stockpiles themselves will be minor as a result of the weight of the material and the location of the operation. The specific gravity is approximately 3.8 and only very fine particles could become windborn. The screening operation will be located on the east side of the foundry and immediately south of the inactive cooling water canals. In this location, the product piles will be protected from the prevailing west winds by the foundry and other buildings, from the north winds by the raw slag stockpile. While it is possible for winds from the east and south to move across the pile, fugitives would be

prohibited from being transported off the premises by the raw slag stockpile and foundry buildings.

Due to the quick turnover of stockpiles, Chemetco feels that the application of surfactants would not be effective, and indeed would constitute a needless waste of time and effort. However, in order to prevent any fugitive emissions, Chemetco will use a water truck to spray the slag product piles to keep airborne dust to a minimum.

4.2 Processing

In order to control particulate emissions while processing the slag, the water truck will be driven to the area of the unscreened slag pile that is being used to pre-moisten the slag in sufficient quantity to keep particulate emissions to a minimum during the screening process. Where possible chutes will be constructed at transfer points in order to minimize emissions during the processing.

In addition to pre-moistening, the high specific gravity and the wind protected location, should work to keep processing material from becoming airborne. The continual removal of processed material does not allow for wind erosion of product piles to occur and therefore surfactants will not be applied.

4.3 Vehicular Traffic

Only a front-end loader will remain at the screening site. All other trucks do not belong to Chemetco so there are no parking lots, paved or unpaved associated with slag screening. These trucks will enter at the back gate and be required to drive as far as the product loading area on an unpaved road. The average round trip distance constitutes approximately one mile. As always, Chemetco will strive to keep vehicular dust to a minimum by watering roads and traffic areas with a water truck when dusty conditions develop.

5.0 EMISSIONS CALCULATIONS

5.1 Processing and Fugitive Emissions

Based on various factors such as the process weight rates, stockpiles, vehicular traffic, local weather conditions, and slag properties, emissions for the screening operation as a whole have been calculated and, in turn, the emissions for the Chemetco facility have been re-evaluated to show compliance with all applicable rules and regulations.

The assumptions, process emission points, fugitive emission points and all equations and calculations for emissions are shown on the following pages. Average and maximum values have been calculated and related to the facility for a worst case basis.

SLAG SCREENING PLANT - PARTICULATE EMISSION ESTIMATE

ASSUME: 1) 125 TONS PER HOUR AVERAGE, 139 TONS PER HOUR MAXIMUM
 2) 1 FRONT-END LOADER IN OPERATION
 3) 6.5 HOURS PER DAY, 260 DAYS PER YEAR 1690 HOURS PER YEAR
 4) 4 SEPARATELY SIZED STOCKPILES

5.2 DEFINITION OF EMISSION SOURCES

SOURCE DESCRIPTION (Continuous unless otherwise indicated)	PROCESS RATE (tons per hour)	MAXIMUM PROCESS RATE (tons per hour)
1) Loader drop-off to feed hopper (batch)	125	138.89
2) Oversize from hopper to pile	3.13	3.47
3) Feed from hopper to Main Conveyor	121.88	135.42
4) Metallic scrap to scrap pile	2.50	2.78
5) Slag from main conveyor to No. 1 screen	119.38	132.64
6) 10" X 2 1/4" slag from No. 1 screen to conveyor	16.88	18.76
7) 10" X 2 1/4" slag from conveyor to stockpile	16.88	18.76
8) 2 1/4" X 1/2" slag from No. 1 screen to conveyor	65.00	72.22
9) 2 1/4" X 1/2" slag from port conveyor to stockpile	65.00	72.22
10) Undersize from No. 1 screen to conveyor	37.50	41.67
11) Undersize from conveyor to No. 2 screen	37.50	41.67
12) 1/2" X 3/16" chips from No. 2 screen to conveyor	12.53	13.92
13) 1/2" X 3/16" chips from conveyor to stockpile	12.53	13.92
14) -3/16" sand from No. 2 screen to conveyor	24.98	27.75
15) - 3/16" sand from conveyor to stockpile	24.98	27.75
TOTAL BATCH:	125.00 tons/hour	138.89 tons/hour
TOTAL CONTINUOUS:	560.63 tons/hour	622.92 tons/year

PLANT OPERATION:

16) ANNUAL FEED = 125 ton/hr X 1690 hr/yr = 211250 ton/year MAXIMUM: 234722.2 ton/year
 17) ANNUAL PRODUCTION = 121.875 ton/hr X 1690 hr/yr = 205968.7 ton/year 228854.1 ton/year

PARTICULATE EMISSION FROM VEHICLE TRAFFIC WITHIN SCREENING PLANT

18) TOTAL ANNUAL QUANTITY OF MATERIAL TRANSPORTED BY VEHICLE WITHIN PLANT: 205968.7 ton/yr removed from plant
 (raw material is at facility) 228854.1 max. ton/yr removed from plant

19) VEHICLE OPERATION:

Product removal trucks leave full

Vehicle types and loading:

18-Wheel (50% of trips): 37.5 ton gross wt.
 17.5 ton tare wt.

 20 ton net wt

6-Wheel (50% of trips): 27.5 tons gross wt
 12.5 tons tare wt.

 15 tons net wt

Total: 35 tons net wt.
 Average No. round trips: 11770

20) STOCKPILE SURFACES

Unprocessed slag pile area:	12 acres	(based upon plant survey)
Active stockpiles:	10" x 2-1/4"	10000 sq. ft
	2-1/4" x 1/2"	10000 sq. ft
	1/2" x 3/16"	10000 sq. ft
	-3/16"	10000 sq. ft
Total*:	40000 sq. ft	(based on Operating plan)
Acres:	0.92	

*Area of the oversize is considered negligible and metallic
scrap will be removed immediately for pyrometallurgical processing.

5.3 DEFINITION OF VARIABLES

E =	Emission factor	0.73 for batch loading, AP-42 Table 11.2.3-2
k =	Particle size multiplier	0.77 for continuous loading, AP-42 Table 11.2.3-2
		0.8 for truck traffic on unpaved roads, AP-42 Table 11.2.1-3
s =	Material silt content	1 for slag from Espey, Huston and Assoc. ISCLT Dispersion Modeling
v =	Mean Wind Speed	5.5 Weather Bureau Data
H =	Drop height	5 ft., actual
M =	Material moisture content	2 %, from Espey, Huston & Assoc. report
Y =	Dumping device capacity	5 yd ³ , actual
S =	Mean vehicle speed	5 mph, actual plant limit
W =	Mean vehicle weight	37.5 tons gross 18-wheel
		17.5 tons tare 18-wheel
		27.5 tons gross 6-wheel
		12.5 tons tare 6-wheel
u =	Mean # of wheels	18
		6
p =	Days with >.01 in. ppt'ion.	110
d =	number of dry days per year	255 = 365 - 110
F =	% of time wind speed >12mph	27.22 %, STAR DATA average from 1973-1977

5.4 EMISSION FACTOR CALCULATIONS

5.4.1 Batch Loading (Eqn. 1 p. 11.2.3-3, AP-42)

$$E = k(0.0018) \frac{(s/5)(v/5)(H/5)}{(M/2)^2 (y/6)^{0.33}}$$

$$E = 0.0003 \text{ lb/ton for Batch Loading}$$

5.4.2 Continuous Loading (Eqn. 2, p. 11.2.3-4, AP-42)

$$E = k(0.0018) \frac{(s/5)(v/5)(H/10)}{(M/2)^2}$$

$$E = 0.000152 \text{ lb/ton for Continuous Loading}$$

5.4.3 Vehicular Traffic within Screening Area (Eqn. 1, p 11.2.1-1. AP-42)

$$E = k(5.9)(s/12)(S/12)(W/3)^{.7}(W/4)^{.5}((365-p)/365)$$

18-Wheel Trucks:	6-Wheel Trucks:
E gross = 0.569 lb/VHT	E gross = 0.265 lb/VHT
E empty = 0.334 lb/VHT	E empty = 0.152 lb/VHT

5.4.4 Wind Erosion of Pile Surfaces (Eqn. 1, p. 11.2.3-5, AP-42)

$$E = 1.7 \frac{(s)(d)(F)}{(1.5)(235)(15)}$$

$$E = 2.23 \text{ lb/acre/day}$$

5.5 EMISSION CALCULATIONS

5.5.1 Batch Loading Emission

$$\text{Emission} = (\text{PHR})(\text{Emission Factor})$$

	lbs/hr	tons/yr
Average =	0.0340	0.0288
Maximum =	0.0378	0.0319

5.5.2 Continuous Loading Emission

$$\text{Emission} = (\text{PHR})(\text{Emission Factor})$$

	lbs/hr	tons/yr
Average =	0.0855	0.0722
Maximum =	0.0950	0.0803

5.5.3 Vehicle Traffic Emission

$$\text{Emission} = (\text{Emission Factor})(\text{Trips})(.5 \text{ Miles per trip})$$

18-Wheel

Empty =	982.44 lb/yr
Full =	1674.96 "

6-Wheel

Empty =	448.19 lb/yr
Full =	778.31 "

Total =	3883.90 lb/yr	Average
	4315.44	

Average Hourly Emission:	2.30 lb/hour
Maximum Hourly Emission:	2.55 lb/hour
Average Annual Emission:	1.94 tons/year
Maximum Annual Emission:	2.16 tons/year

5.5.4 Emission from Wind Erosion of Pile Surfaces

Total Area of Unprocessed and Processed Slag: 12.92

$$\text{Emission} = (\text{Area})(\text{Emission Factor})$$

Daily = 28.83 lb/day

Annual = 5.26 ton/yr

5.6 EMISSION SUMMARY

SOURCE	lb/hr AVERAGE	ton/yr	lb/hr MAXIMUM	ton/yr
BATCH LOADING (based on 1690 hr/yr)	0.03	0.03	0.04	0.03
CONTINUOUS LOADING (based on 1690 hr/yr)	0.09	0.07	0.09	0.08
VEHICLE TRAFFIC (based on 1690 hr/yr)	2.30	1.94	2.55	2.16
WIND EROSION (based on 24 hr day and 365 days per year)	1.20	5.26	1.20	5.26
<hr/>				
TOTALS:	3.62	7.30	3.89	7.53
Lead Content of Slag:	0.72 %			
Lead Emissions:	0.0261	0.0526	0.0280	0.0542

5.7 RE-EVALUATED FACILITY EMISSIONS (tons/year)

	Area 2 Yard Particulate	Total Particulate	Area 2 Lead Emission	Total Lead Emission
Previous	1.7633 (Worst Case)	47.87 tons/year	0.01763 (Worst Case)	5.68 tons/year
With Screening	7.53 (Maximum)	53.6367 tons/year	0.054 (Maximum)	5.71637 tons/year

NOTE: All other categories of facility emissions remain the same.

6.0 REFERENCES

Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, USEPA, AP-42. Fourth Edition September 1985.

BAGHOUSE2, Construction Permit Application for Wheelabrator Jet III Baghouse, Chemetco, Inc., May 1989.

IMS PHOENIX, Construction/Operating Permit Application for Copper Slag Processing Plant, May, 1989.

Justification for the Use of Secondary Copper Smelting Slag in Construction Products, ENSR, Inc. for Chemetco, Inc., June 1988.

ISCLT Dispersion Modeling Results of Lead Emissions from Chemetco Secondary Copper Smelter, Espey, Huston & Associates, Inc., October, 1985.

APPENDIX A

APPENDIX B

TABLE 6.2

SUMMARY - TOTAL EMISSION (T/YR)

PARTICULATE		AVERAGE	
FURNACE PROCESS	36.08		(WORST CASE SITUATION)
(THIS ASSUMES ALL FOUR ARE DOING SMELT HEATS)			
YARD	11.67		(WORST CASE QUARTER)
COMBUSTION	0.12		
TOTAL	47.87	T/YR	
LEAD			
FURNACE PROCESS	5.41		(WORST CASE SITUATION)
YARD	0.27		(WORST CASE QUARTER)
TOTAL	5.68	T/YR	
NOX			
SMELTING/SLAG TREATMENT	0.00		
REFINING	0.00		
MELTING	0.00		
COMBUSTION	13.05		
TOTAL	13.05	T/YR	
CO			
SMELTING/SLAG TREATMENT	160.17		
REFINING	19.72		
MELTING	1.77		
COMBUSTION	0.83		
TOTAL	182.50	T/YR	
VOLATILE ORGANICS			
SMELTING/SLAG TREATMENT	16.02		
REFINING	1.97		
MELTING	0.18		
COMBUSTION	0.14		
TOTAL	18.30	T/YR	
SO2			
SMELTING/SLAG TREATMENT	0.00		
REFINING	0.00		
MELTING	0.00		
COMBUSTION	0.06		
TOTAL	0.06	T/YR	

SOURCE - AREA 2	DUMPING	TRAFFIC	HAUL ROAD	GRANULATION
47) EMISSION FACTOR, #/T	0.001	0.072	N/A	0.007
48) EMISSION FACTOR, #/VEHICLE MILE	N/A	N/A	1.08	N/A
49) MATERIAL HANDLED, T/YR OR MILES TRAVELED, MI/YR	6544	6544	260	58894
50) EST. tsp EMISSION, #/YR	6.544	471.168	280.8	412.258
51) EST tsp EMISSION, T/YR	0.003272	0.235584	0.1404	0.206129
52) PB CONTENT, %	1	1	1	1
53) EST. PB EMISSION, T/YR	0.000032	0.002355	0.001404	0.002061
54)	TOTAL AREA 2, PB:	0.017633 T/YR	TOTAL AREA 2, TSP:	1.763305 T/YR
		0.017240 "		1.724041 "
		0.010892 "		1.089273 "
		0.012201 "		1.220153 "

477 REF. "ISCLT DISPERSION MODELING RESULTS", OCT. 1985

48) ACTUAL BASIS

432 ACTUAL BASIS

502 EMISSION FACTOR x ACTUAL BASIS

510 EMISSION/2000

52) ACTUAL LEAD CONTENT

530 T/YR EMISSION & LEAD PERCENTAGE

54) SUBTOTAL ALL CONTRIBUTING UNITS

APPENDIX C



217/782-6762

Refer to: LPC #1198010003 -- Madison County
Chemetco
ILD048843809

July 15, 1988

Mr. David Hoff, President
Chemetco
P.O. Box 187
Alton, IL 62002

Dear Mr. Hoff:

Pursuant to the recently approved Consent Order (No. 88-CH-200) the Agency has reviewed the analytical data of the re-analysis of the slag from Chemetco's Alton facility. Based on the analysis that was run by the L.C. Metals Laboratory and the IEPA's Laboratory, we are in agreement that the slag is not a RCRA hazardous waste.

The Agency has also reviewed the document entitled "Justification for the Use of Secondary Copper Smelting Slag in Construction Projects" submitted to the Agency by Mark Haney, ERT, under a cover letter dated June 2, 1988. The document proposes four (4) types of off-site construction uses for the chunky slag from Chemetco's Alton facility. The following are the Agency's comments on the proposed off-site uses of the slag:

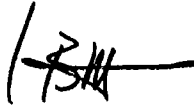
1. Incorporation of the slag into a solid matrix-like concrete should result in minimal leaching of lead and cadmium and is, therefore, the Agency's preferred off-site use of the slag.
2. If the slag is used as roadbed material, steps should be taken to keep the potential leaching of lead and cadmium to an absolute minimum. Care should be taken to minimize infiltration and prohibit any potential leachate from impacting the environment. It would also be necessary to use the slag only in sites which will always be above the groundwater table and which are removed from permanent surface water bodies.

3. Off-site use of the slag as parking lot or railroad ballast material may cause a violation of the Act, since these uses could result in significant amounts of lead and probably cadmium leaching into the environment. Specifically, off-site use of the slag as parking lot or railroad ballast material appears to be too "open" to the environment and runs the risk of potentially being a long-term source of lead and cadmium to any environment in which the slag might be placed.

The above comments were based on the EP Tox results for lead (all three testing regimes) indicating that leachate from the slag will not exhibit a hazardous characteristic.

The above are only offered as comments. Any final decision regarding the use of the slag rests with Chemetco. While the Agency supports beneficial uses of materials which might otherwise be classed as wastes, Chemetco would in no way be excused from any violations of the Act which may occur.

Very truly yours,

Lawrence W. Eastep 

Lawrence W. Eastep, P.E., Manager
Permit Section
Division of Land Pollution Control

LWE:GTR:tk:5/11/47-3

cc: Collinsville Region
Division File
Roger Kanerva
Larry Eastep
Harry Chappel
Bruce Carlson
Glenn Savage
Bill Child
Jim O'Brien
Mark Haney, ERT

TABLE 3-1
SLAG PROJECT TLRU, MARCH 1988

<u>Comp #</u>	<u>Date of Analysis</u>	<u>Date of Extraction</u>	<u>Pb mg/L</u>	<u>Cd mg/L</u>
1	18-Apr	14-Apr	3.22	0.130
2	06-May	04-May	2.00	0.068
3	06-May	05-May	1.95	0.085
4	18-Apr	15-Apr	2.09	0.150
5	13-May	12-May	5.70	0.228
5 dup	27-Apr	26-Apr	6.00	0.242
6	18-Apr	17-Apr	1.85	0.029
7	10-May	06-May	2.25	0.052
8	06-May	03-May	4.19	0.296
9	21-Apr	18-Apr	2.94	0.023
10A	25-Apr	19-Apr	2.00	0.060
10B	25-Apr	20-Apr	2.64	0.052
11	03-May	02-May	2.77	0.044
12	03-May	30-Apr	1.40	0.050
13	25-Apr	21-Apr	5.33	0.220
14	25-Apr	23-Apr	5.60	0.075
15A	30-Apr	27-Apr	2.17	0.018
15B	13-May	09-May	2.98	0.028
15C	13-May	10-May	2.44	0.015
16	25-Apr	22-Apr	3.06	0.119
17	30-Apr	28-Apr	0.52	0.107
18	10-May	07-May	6.33	0.121
19	27-Apr	24-Apr	1.30	0.017
20A	03-May	29-Apr	1.47	0.045
20B	10-May	08-May	2.79	0.022

- Without Duplicates

	<u>Pb</u>	<u>Cd</u>
Number of Duplicates	20	20
Σ	58.15	1.937
Range	0.52-6.33	0.017-0.296
\bar{X}	2.91	0.097

- With Duplicates

	<u>Pb</u>	<u>Cd</u>
Number of Samples	25	25
Σ	75.00	2.296
Range	0.52-6.33	0.015-0.296
\bar{X}	3.00	0.092

Table 3-2

Simulated Acid Rain Leach Tests

CHEMETCO INC SLAG SIMULATED "ACID RAIN" LEACH TEST												CHEMETCO INC SLAG SIMULATED "ACID RAIN" LEACH TEST														
DESIG- NATION	T=0HR		T=1HR		T=2HR		T=3HR		T=4HR		T=5HR		T=6HR		T=7HR		T=8HR		T=9HR		T=10HR		T = 54HR		DESIG- NATION	
	PH	TEMP	PH	TEMP	PH	TEMP	PH	TEMP	PH	TEMP	PH	TEMP	PH	TEMP	PH	TEMP	PH	TEMP	PH	TEMP	PH	TEMP	LEAD	CHROMIUM		
118	3.9	14	4.15	14.5	4.1	14	4.55	15	4.05	15	4.55	16	5.15	16	4.4	16.5	3.6	16.5	3.7	17	4.38	16	4	0	118	
128	4.05	14	3.75	14.5	3.95	14.5	4.15	15	3.95	15	4.35	16	4.65	16.5	4	16.5	3.5	15	3.55	17	3.64	17	2.63	0.015	128	
138	8.98	14	8.2	14.5	8.9	14.5	9.65	15	9.75	15	9.55	16	9.75	16	9.45	17	10.45	17	10.25	17	10.3	17	0.288	0.063	138	
148	9.19	14	8.35	14	8.75	14.5	9.3	15	9.35	15	9.35	16	9.35	16	9.2	17	10.1	17	9.98	17	10.04	17	0.18	0	148	
158	7.95	14	8.85	14	8.7	14.5	9.15	15	9.15	15	9.15	16	9.25	16	9.15	16.5	10	17	9.9	16.5	11.49	17	0.277	0.025	158	
168	8.45	14	8.95	14.5	8.95	14.5	9.3	15	9.25	15	9.25	16	9.35	16	9.25	16.5	10.3	16.5	10.2	16.5	10.51	17	0.235	0.037	168	
178	8.75	14	8.85	14	9.05	14.5	9.35	15	9.35	15	9.3	15.5	9.4	15.5	9.35	16.5	10.45	16.5	10.35	17	10.42	17	0.205	0.099	178	
188	9.1	14	8.7	14.5	8.2	14.5	9.65	15	9.55	15	9.45	16	9.55	16	9.55	16.5	10.9	17	10.85	17	10.85	17	0.098	0.032	188	
218	4	14	4.1	14	4.35	14.5	4.8	15	5.3	15	4.85	15.5	5.85	16.5	5.2	16.5	4.7	17	5.2	17	5	17	1.46	0	218	
228	4.15	14	3.75	14	4	14.5	4.25	15	4.2	15	4.35	15.5	4.9	16	4.7	16.5	4.46	16.5	4.6	16.5	5.05	17	1.84	0.02	228	
238	8.45	14	5.9	14.5	5.95	14.5	6.45	15	6.05	15	5.95	15.5	6.45	16	6.05	16.5	6.95	17	6.9	16.5	6.59	17	0.381	0.021	238	
248	8.9	14	5.85	14	6.05	14.5	6.85	15	6.55	15	6.75	16	7.1	16	6.8	16.5	8.65	17	8.5	17	8.18	17	0.332	0.013	248	
258	6.25	14	6.65	14	7.05	14.5	7.5	15	7.8	15	7.75	16	8.2	16.5	7.7	16.5	9.4	16.5	8.97	16.5	8.8	17	0.373	0	258	
268	7.2	14	7.55	14.5	7.6	14	8.15	15	8	15	8.1	15.5	8.4	16	8.1	16.5	9.15	16.5	9.05	16.5	8.92	17	0.355	0	268	
278	7.55	14	7.65	14.5	7.85	14.5	8.35	15	8.3	15	8.35	15.5	8.45	16	8.25	16.5	9.2	17	9.1	17	9.04	17	0.376	0.113	278	
288	7.65	14	7.85	14.5	8.2	14.5	8.45	15	8.45	15	8.45	16	8.55	16.5	8.35	17	9.35	17	9.4	17	9.34	17.5	0.326	0	288	
318	3.75	14	3.55	14.5	3.95	15	4.15	15	8.15	15	4.5	15.5	4.75	16.5	4.4	17	4.15	17	4.22	17	4.2	17	1.3	0.041	318	
328	3.8	14	3.5	14.5	3.7	15	3.9	15	3.85	15	4.05	16	4.25	16.5	3.9	17	4	17	3.7	17	3.6	17	2.09	0.073	328	
338	7.6	14	5.5	14.5	5.6	14.5	5.05	15	5.55	15	5.75	16	7.25	16.5	5.65	17	7	17	6.6	17	6.87	17	0.555	0	338	
348	7.7	14	6.15	14.5	6.45	15	6.75	15	7.25	15	7.25	16	7.25	16.5	6.35	17	8.7	17	8.51	17.5	8.4	17.5	0.194	0	348	
358	6.55	13	7.35	13	7.2	13.5	7.6	14	7.85	14	7.95	14.5	7.85	15	7.55	15.5	8.9	15	8.8	15.5	8.8	15	0.744	0.005	358	
368	7.25	12	7.8	13	7.95	13	8.05	13.5	8.25	14	8.15	14.5	8.35	15	8.15	15	9.15	15	9.2	15	9.2	15	1.35	0.005	368	
378	7.65	13	7.75	13.5	8	13.5	8.2	14	8.25	14	8.25	15	8.3	15	8.2	15	9.05	15	9.05	25.5	9.05	15.5	2.25	0.051	378	
388	7.85	13	7.95	13	8.15	13.5	8.4	14	8.35	14	8.35	14.5	8.4	15	8.25	15.5	9.15	15.5	9.1	15.5	9.1	16	1.83	0	388	
418	3.95	13.5	3.55	13.5	3.8	14	4.05	14.5	3.9	15	4.05	15.5	4.35	16	4.3	16	4.15	16	4	16.5	4.3	16.5	9.26	0.065	418	
428	3.75	13.5	3.45	13.5	3.5	14	3.7	14.5	3.65	14.5	3.7	15	3.8	15.5	3.65	16	3.5	16	3.5	16.5	3.5	16	5.69	0.032	428	
438	5.9	13.5	5.7	13.5	5.75	14	5.95	14.5	5.65	14.5	5.95	15	5.85	15.5	5.75	15.5	6.3	16	6.4	16	6.35	16	0.36	0.091	438	
448	5.65	14	5.4	13.5	5.65	14	6.15	14.5	5.75	14.5	6.2	15	6.35	15.5	6.2	16	8.2	16	8.4	16	8.8	16	0	0.005	448	
458	6.4	13.5	6.05	13.5	6.75	14	7.5	14.5	7.05	14.5	7.2	15	7.35	15	7.15	15.5	8.5	15.5	8.7	16	9	15.5	0	0.005	458	
468	6.7	13	6.55	13.5	7.25	13.5	7.9	14	7.55	14.5	8.05	14	7.95	15	7.85	15.5	9	16	9.05	15.5	9.25	16	1.91	0.081	468	
478																										478
488																										488
518	7.15	13	6.9	13	7.3	13.5	7.65	14	7.55	14	7.75	15	7.7	15	7.9	15	8.2	15.5	7.75	15.5	8.4	15.5	0	0	518	
528	3.5	13	3.4	13	3.5	13.5	3.65	14	3.6	14	3.7	15	3.75	15	3.65	15.5	3.55	15.5	3.45	15.5	3.5	15.5	3.84	0.73	528	
538	3.55	13.5	3.35	14	3.55	14	3.75	14.5	3.85	15	4.15	15	4.4	16	4.4	16	4.6	16	4.75	16	5	16	0	0.025	538	
548	5.6	13	5.45	13	5.85	13	5.9	13.5	5.95	14	5.95	14.5	6.05	14.5	5.75	15	8.35	15	8.25	15	8.2	15	0	0.25	548	
558	5.65	13.5	5.55	14	5.9	14	6.05	14.5	6.15	14.5	6.15	15	6.55	15.5	6.25	16	8.5	16	8.4	16	8.75	16	0	0.005	558	
568	6.05	12.5	6.1	12.5	6.45	13	6.6	13.5	6.4	14	6.65	14.5	7.05	14.5	6.8	15	8.35	15	8.35	15	8.4	15	0	0.081	568	
578	6.4	13	6.45	13	6.85	13.5	6.9	14	6.8	14.5	7.15	15	7.25	15	7.05	15.5	8.35	15.5	8.35	15.5	8.4	15	0	0.078	578	
588	6.45	13	6.65	13	6.95	13.5	7.25	14	6.95	14.5	7.35	15	7.4	15	7.25	15.5	8.5	15	8.5	15.5	8.65	15	0	0.045	588	

NOTES

TEMP = DEGREE CENTIGRADE
PH = "PH" UNITS

ACID RAIN SOLUTION WAS COMPRISED OF 2 PARTS OF H2SO4 AND 1 PART HNO3 ; INITIAL PH WAS 4.5 .NO PH OR TEMPS TAKEN AFTER T=10HR

APPENDIX D

Enseco

ENSECO-CAL LAB

POLYCHLORINATED DIOXIN/FURAN ANALYSIS

CASE NO. 29030

CLIENT ID: 42456 FIELD:5

Date Analyzed: 5/8/87

Column: DB-5

CAL ID: 29030-1

Weight: 1.60G

FURANS	AMOUNT FOUND (ng/g)	DETECTION LIMIT (ng/g)
tetra (total)	ND	0.073
penta	ND	0.46
hexa	ND	0.16
hepta	ND	0.36
octa	ND	0.91
DIOXINS		
tetra (total)	ND	0.099
penta	ND	0.36
hexa	ND	0.55
hepta	ND	0.46
octa	ND	1.2

* Accuracy 37Cl-TCDD = 89%

* Recovery 13C-2378-TCDD = 77%

* Recovery 13C-2378-TCDF = 68%

TCDD Equivalence = NA

ND = Not Detected

PREPARED BY: B

APPROVED BY: BSM

DATE: 5/19/87



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF:

Robert F. Van Voorhees
Bryan, Cave, McPheeters
& McRoberts
1015 15th Street, NW
Washington, D.C. 20005-2689

APR 09 1987

RE: Chemetco, Inc.

Dear Mr. Van Voorhees:

This is intended to confirm the substance of the understandings we reached at our meeting on April 8, 1987, in Chicago. The Agency, through its contractors, Ecology & Environment, Inc., will take the following samples at Chemetco facility:

1. One composite sample taken from the "staging area" (i.e. the concrete pad on which incoming materials are held prior to their introduction into Chemetco's process).
2. One grab sample from the polish pit sludge.
3. One grab sample from the former cooling canal area.
4. One composite sample from the scrubber sludge (ZnO) area.
5. With regard slag sampling, it is our understanding that Chemetco will select one of the bags which contain slag samples previously taken, and have that sample analyzed for dioxins in accordance with the test methodology and procedures to be transmitted from Don Bruce to Jim Lennon. The results of that sampling will be conveyed by telephone to Don Bruce as soon as they are available.

During the other sampling to be conducted at the Chemetco facility, the Agency's contractors will select a second bag from among the stored slag samples, will split that sample with Chemetco, and retain a portion for the Agency's analysis.

-2-

In our continuing efforts to try to meet the Agency's needs while at the same time being sensitive to the concerns of Chemetco, my understanding is that the date for sampling will be selected to provide the least possible intrusion into Chemetco's operations. Prospective dates are April 14 or April 17, 1987. There's also the possibility of performing the sampling on a weekend day to minimize its impact on Chemetco's operations. The actual date for the sampling efforts should be determined through conversations with Don Bruce.

As always, please contact me with any questions at (312) 886-6595.

Very truly yours,



Roger Grimes
Assistant Regional Counsel

CC: John Suarez
Chemetco, Inc.
Route 3 & Oldenberg Road
Hartford, Illinois 62002



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

**230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604**

-
- **REPLY TO THE ATTENTION OF:**
- **54E-12**

**Robert F. Van Voorhees
Bryan, Cave, McPheeters & McRoberts
1015 15th Street, NW
Washington, D.C. 20005-2689**

RE: Chemetco, Inc.

Dear Mr. Van Voorhees:

This letter is in regards to the analysis of samples to be taken at the Chemetco facility by the United States Environmental Protection Agency (U.S. EPA) and it's contractor as part of a Site Inspection to be conducted in the near future. The five (5) samples to be analyzed by a U.S. EPA contract laboratory will be analyzed for total tetra, penta, hexa, hepta, octa chlorinated dibenzo-P-dioxins (TCDDs, Pa CDDs, Hx CDDs, Hp CDDs, OCDDs) and total tetra, penta, hexa, hepta, octa chlorinated dibenzofurans (TCDFs, Pa CDFs, Hx CDFs, Hp CDFs, OCDFs). The analysis will follow the protocols identified in a Special Analytical Service (SAS) Contract Invitation For Bids (IFB) WA-86K 357. These protocols have been established primarily for the analysis of 2, 3, 7, 8 - TCDD in soils. Therefore, it is understood that both Chemetcos' lab and the U.S. EPA contract lab may make modifications to the protocols if necessitated by the nature of the sample matrix and the need to analyze for the other dioxin homologues.

I am looking forward to coordinating this effort with Chemetco, ERT and yourself. If you have any additional questions or concerns, please feel free to contact me at (312) 896-7241.

Sincerely,

A handwritten signature in cursive script, reading "Donald J. Bruce".

**Donald J. Bruce
CERCLA Enforcement Section**

cc: Jim Lennon, ERT

APPENDIX E

MICHELLE
T. SEAT TO BILL TRIMM
SWB.



Illinois Department of Transportation

Division of Highways/District 8
1100 Eastport Plaza Drive/P.O. Box 988/Collinsville, Illinois 62234-6198

December 9, 1988

Ms. Michelle Reznack
P.O. Box 187
Alton, IL 62002

Dear Ms. Reznack:

In follow up to our meeting with Chemetco's President David Hoff and yourself on Thursday, December 1, 1988, I have attached copies of pertinent IDOT tests conducted on Chemetco's copper slag.

These test results specifically are:

1. Freeze-thaw test result for copper-slag in P.C. Concrete Pavement.
2. Copper Slag Bituminous Mix Design Investigation.
3. Quality Tests on Copper Slag.
4. Variable Speed Friction Test of Copper Slag.

As pointed out at our meeting, creating stockpiles of appropriately sized, metal free material needs to be addressed first.

If we can be of further assistance, please don't hesitate to contact this office.

Very truly yours,

Dale L. Klohr
District Engineer

Thomas A. McCarthy PHB

Thomas A. McCarthy
District Materials Engineer

PHB:rah/0334a

attachment



Illinois Department of Transportation

Memorandum

To: D. L. Klohr Attn: T. A. McCarthy
From: J. G. Gehler By: W. E. Chastain, Jr.
Subject: Freeze-Thaw Test Results
Date: May 6, 1988

Attached are freeze-thaw test results from Chemco, Hartford, Illinois, P/S #77000-98. The gradations tested were CA07 and CA11 sampled from copper slag.

Based on the attached freeze-thaw results, Chemco copper slag meets the 1" rating. Please notify Chemco of their freeze-thaw test results.

W E Chastain

WMS/blb

Attachments (2)

STANDARD BAR LENGTH 154126

SOURCE NAME Chicago, Hartford, IL DATE CAST 3-3-88

SLUMP, INCHES 2 1/2
AIR, % 6.6
STRENGTH, P.S.I. 4658

LOC. WITHIN QUARRY Colony 1 DATE FIRST CYCLE 3-16-58

MLSTIC # 88275 H GROUP 402

[illegible]

DIAL = Direct Reading From Prism (after zeroing on standard)

$$\text{ACTUAL} = \text{Standard Length} + \text{DIAL}$$
$$\% \text{ EXP} = \frac{\text{Current Actual Length} - \text{Initial Actual Length}}{\text{Initial Actual Length}} \times 100$$

194126

AIR, % 7.0

STRENGTH, P.S.I. 4915

GROUP 102

$$\% \text{ EXP} = \frac{\text{Current Actual Length} - \text{Initial Actual Length}}{\text{Initial Actual Length}} \times 100$$

Bill Sheftick



Illinois Department of Transportation

Memorandum

To: Files
From: E. E. Harm
Subject: Copper Slag Mix Design Investigation
Date: September 9, 1985

Attached are the results of an investigation using copper slag coarse aggregate (CM13 and CM11), a natural sand (FA01) and mineral filler in both a binder and surface mixture. These designs were performed to determine the feasibility of using copper slag coarse aggregate in Class I bituminous mixtures.

The binder test results for 4.5 percent asphalt are probably in error and should be excluded. The remaining three asphalt contents indicate the mix is somewhat sensitive to asphalt content between 4.0 and 5.0 percent asphalt. The stability dropped from 1990 to 1460 with only a 0.27 drop in air voids. The optimum asphalt content for an air void range of 2.5-3.5 percent would probably be less 4.0 percent asphalt. The VMA at 4.0 percent asphalt is low, 11.32, compared to the minimum of 14 specified for interstate binders.

The surface design indicates a satisfactory interstate type mixture can be designed. The optimum asphalt content for 4 percent voids with 50-blow compaction is 4.4 percent. The VMA of 4.4 percent asphalt is 14.5, the minimum allowed for interstate type mixes.

Surface mixes

Tests were performed on both the binder and surface mixtures to determine their potential for asphalt stripping. The Department's current stripping test was used. The binder mixture indicated no stripping at any asphalt content, TSR's all above 1.0. The surface mixture at 4.0 and 3.5 percent asphalt indicated some stripping, TSR's of .64 and .79 respectively. These values are above 0.70, the criteria value below which an antistrip additive is recommended.

Files
September 4, 1985
Page Two

The preliminary mix designs indicate copper slag coarse aggregate can be used in bituminous Class I mixtures. In binder mixtures, the Marshall stabilities may be too low for use in applications where high stabilities are required. The binder design indicated a sensitivity to asphalt content in regards to Marshall stability. The surface design indicates a satisfactory design can be obtained, but at lower asphalt contents, minor stripping is occurring.

Eric E Harm

EEH/cdm

Attachment

cc: Gien Sawyer
Bill Sheftick
Byron Nesbitt
Eric Harm

DESIGN

DOT - Bureau of Materials and Physical Research
Bituminous Mixture Design

DATE: 09-Aug-85

SEQ NO:

Design Number: 5581T0000

Mixture Producer:
Mixture:

0

Agg No. 01 02 03 04 05 06 ASPHALT
Size CM13 FA01 MF01 AC20
Source (PROD) (CU SLAB)
(NAME) (CU SLAB) BUCKHART-LIV. SHELL WR
(LOC)

Aggregate Blend 65.0 30.0 4.0 100.0

Agg No.	01	02	03	04	05	06	Blend	Specifications Min	FORMULA Max	FORMULA RANGE Min	Max
Sieve Size											
1	100.0	100.0	100.0				100.0		100		
3/4	100.0	100.0	100.0				100.0		100		
1/2	97.7	100.0	100.0				92.5		98		
3/8	82.3	100.0	100.0				65.3		85		
#4	37.4	100.0	100.0				58.7		59		
#8	16.0	72.8	100.0				35.4		36		
#16	3.2	48.3	100.0				20.6		21		
#30	1.9	29.8	100.0				14.2		14		
#50	1.7	18.3	100.0				10.6		11		
#100	1.5	10.0	99.7				8.0		8		
#200	1.5	5.1	87.7				6.0		6.0		

Bulk Sp Gr	3.59	2.55	2.65	1	1	1	
Apparent Sp Gr	3.66	2.67	2.65	1	1	1	
Absorption, %	0	0	0	0	0	0	
							SP GR AC 1.03

SUMMARY OF MARSHALL TEST DATA

	A C Z MIX	FLOW STABILITY 1/100	MARSHALL POUNDS	MAXIMUM VOIDS SPEC GR	TOT MIX	VMA	FILLED	EFFECT V AC, VOL	AC, ZWT	ABSORPTION WATER	AC	VOL AC
MIX 1	3.50	7.7	2160	2.79	3.00	7.10	15.14	53.1	8.04	2.97	1.43	9.1
MIX 2	4.00	8.5	2319	2.82	2.97	5.19	14.65	64.6	9.46	3.46	1.48	10.1
MIX 3	4.50	9.2	2304	2.84	2.95	3.69	14.54	74.6	10.84	3.94	1.55	12.1
MIX 4	5.00	11.3	2104	2.86	2.92	1.99	14.36	86.1	12.37	4.46	1.50	13.1

OPTIMUM DESIGN DATA:	1 AC	STABILITY	FLOW	d	D	1 VOIDS	VMA
	4.4	2325	9.0	2.83	2.95	4.00	14.5

REMARKS: COPPER SLAG SAND STUDY

J. B. Gehler, P.E.
Engineer of Materials and Physical Research

BOES16NW

DOT - Bureau of Materials and Physical Research
Bituminous Mixture Design

DATE: 19-Aug-85

Design Number: 5581T0000

SED NO:

Mixture Producer:

Mixture:

0

Agg No. 11 12 13 14 15 16 ASPHALT
Size CM11 FA1 MF01 AC20
Source (PROD) (CUSLAG)
(NAME) (CUSLAG) BUCKHART LIV.
(LOC)

Aggregate Blend 60.0 36.0 4.0 100.0

Agg No.	11	12	13	14	15	16	Blend	Specifications	FORMULA	FORMULA RANGE	
Sieve Size								Min	Max	Min	Max
1	100.0	100.0	100.0				100.0			100	
3/4	93.1	100.0	100.0				95.9			96	
1/2	55.8	100.0	100.0				73.5			73	
3/8	32.0	100.0	100.0				59.2			59	
1/4	2.9	100.0	100.0				41.7			42	
1/8	0.6	72.8	100.0				30.6			31	
1/16	0.5	48.3	100.0				21.7			22	
1/30	0.5	29.8	100.0				15.0			15	
1/50	0.4	18.3	100.0				10.9			11	
1/100	0.4	10.0	99.7				7.8			8	
1/200	0.3	5.1	67.7				5.5			5.5	

Bulk Sp Gr	3.58	2.55	2.85	1	1	1	
Apparent Sp Gr	3.65	2.69	2.85	1	1	1	
Absorption, %	0.5	0	0	0	0	0	
					SP GR AC	1.63	

SUMMARY OF MARSHALL TEST DATA

	A C	FLOW	STABILITY	MARSHALL	MAXIMUM	VOIDS	EFFECTIVE			ABSORPTION			VOL
	MIX	1/100	POUNDS	SPEC GR	SPEC GR	TOT MIX	VMA	FILLED	AC, VOL	AC, INT	WATER	AC	AC
MIX 1	4.00	11.1	1966	2.86	2.62	2.14	11.32	81.1	9.19	3.31	2.50	1.53	11.1
MIX 2 *	4.50	11.8	1680	2.84	2.90	2.08	11.23	82.6	10.63	3.60	2.90	1.75	12.5
MIX 3	5.00	14.4	1459	2.82	2.68	1.67	13.39	86.0	11.52	4.20	2.93	2.19	13.7
MIX 4	5.50	18.2	1269	2.81	2.64	1.22	14.33	91.5	13.11	4.91	2.60	1.66	15.0

OPTIMUM DESIGN DATA: % AC STABILITY FLOW d D % VOIDS VMA

REMARKS: BINDER OF THE COPPER SAND STUDY

J. G. Gehler, P.E.
Engineer of Materials and Physical Research

*Projected



Illinois Department of Transportation

Bureau of Materials and Physical Research
126 East Ash Street/Springfield, Illinois/62704-4766

September 11, 1985

Mr. Ed Golisch
International Mill Service
P. O. Box 398
Granite City, IL 62040

Dear Mr. Golisch:

The tests on the samples of copper slag you submitted to our laboratory for aggregate and bituminous evaluation have been completed. The copper slag was obtained from Chemetco, Hartford, Illinois. The following table summarizes the aggregate quality test results.

Gradation	Specific Gravity		Absorption (%)	Soundness Loss(%)	Abrasion Loss(%)	Soft & Unsound(%)
	Dry	Surf. Dry				
CA07	3.58	3.60	0.5	1.0	31.4	1.1
CA13	3.59	3.61	0.6	0.7	24.7	1.3

The quality tests indicate the material would meet Class B quality requirements.

The bituminous evaluation is described in the accompanying memorandum and design data sheets. Any questions concerning the bituminous evaluation should be directed to Mr. Eric Harm of this office.

The test data shown is preliminary information only and should not be construed to mean acceptance or rejection of the material in the event the copper slag is processed. Final acceptance or rejection of this material must be based on tests of the processed products.

Very truly yours,

J. G. Gehler, P.E.
Engineer of Materials
and Physical Research

WMS/jlg

Attachments

cc: Glen H. Sawyer w/Attachments



Illinois Department of Transportation

Bureau of Materials and Physical Research
126 East Ash Street/Springfield, Illinois/62704-4766

*Frank J. H. S.
August
File*

October 17, 1988

Mr. E. W. Golisch
International Mill Service
P. O. Box 1498
Alton, IL 62002

Dear Mr. Golisch:

The Variable Speed Friction Test has been completed on the sample of copper slag taken from Chemetco in Hartford, Illinois, by International Mill Service of Alton. The copper slag had a final Variable Speed Number (VSN) of 41.

The copper slag VSN is comparable to air-cooled blast furnace slag and crushed steel slag VSN test results.

The test data shown is preliminary information only and should not be construed to mean acceptance or rejection of the aggregate products. If you have any questions concerning these results, please contact Mr. William Sheftick of this office at (217) 782-7210.

Very truly yours,

W. Emmitt Chastain Jr.

W. E. Chastain, Jr.
Engineer of Tests

BBS/jlg

cc: T. A. McCarthy, District Eight Materials Engineer



ANCO TESTING LABORATORY, INC./

1552 SOUTH 7TH, P.O. BOX 12223 ST. LOUIS, MO 63157
2921 EAST McCARTY, JEFFERSON CITY, MO 65101

314-241 0525
314-634-7070

Report No. A-288092 Supplement

November 15, 1988

Project: Coarse and Fine Slag
Compressive Strength Evaluation

P. O. No. 54863-1

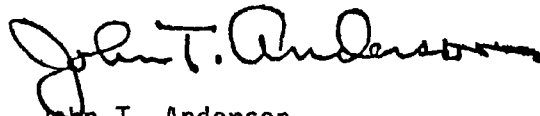
Chemetco
Route 3 and Oldenberg Road
P. O. Box 67
Hartford, Illinois 62048

Gentlemen:

Supplementing our Report No. A-288092, we report herewith results of twenty-eight (28) day compressive strength tests made in connection with the concrete mix design trial batches conducted for the above project.

Should there be any questions regarding this report, please advise.

Respectfully submitted,



John T. Anderson
ANCO TESTING LABORATORY, INC.

JTA:jla
3-Chemetco

Report No. A-288092 Supplement
Page No. 1

Project: Coarse and Fine Slag
Compressive Strength Evaluation

COARSE AGGREGATE TESTS

Coarse Copper Slag

SIEVE ANALYSIS
(Gradation by Weight)

U. S. Standard Sieve Size	Cumulative Percent		Specification* Percent Passing
	Retained	Passing	
1"	0.0	100.0	100
3/4"	31.7	68.3	90 - 100
1/2"	84.0	16.0	- - - -
3/8"	96.5	3.5	20 - 55
No. 4	98.3	1.7	0 - 10
No. 8	99.1	0.9	0 - 5
Fineness Modulus	7.26		

*ASTM Specification C33-86 - Size No. 67

Bulk, Specific Gravity (Saturated, Surface-Dry Basis) 4.07

FINE AGGREGATE TESTS

Fine Copper Slag

SIEVE ANALYSIS
(Gradation by Weight)

U. S. Standard Sieve Size	Cumulative Percent		Specification* Percent Passing
	Retained	Passing	
3/8"	0.0	100.0	100
No. 4	0.0	100.0	95 - 100
No. 8	1.3	98.7	80 - 100
No. 16	25.4	74.6	50 - 85
No. 30	67.0	33.0	25 - 60
No. 50	92.7	7.3	10 - 30
No. 100	97.6	2.4	2 - 10
Fineness Modulus	2.84		

*ASTM Specification C33-86

Bulk, Specific Gravity (Saturated, Surface-Dry Basis) 3.95

Report No. A-288092 Supplement
Page No. 2

Project: Coarse and Fine Slag
Compressive Strength Evaluation

Concrete Proportions - In Pounds to Produce One Cubic Yard

MIX DESIGNED FOR USE IN PLANT USE CONCRETE EXPOSED TO WEATHER

Mix No. I

Specification Requirement - 4000 psi Minimum

<u>Material</u>	<u>S.S.D. Weights</u>	<u>Scale Weights*</u>
Portland Cement (Type I)	611	611
Fine Slag	2088	2111
Coarse Slag	2330	2330
Water	305	283
AEA - MBVR	5.5 oz.	5.5 oz.

*Saturated, Surface-Dry Weights adjusted to compensate for 1.1 percent free moisture in the sand and 0.0 percent moisture in the coarse slag.

Mix Physical Properties Test Data - Test Conducted on October 18, 1988

Slump Produced - Inches	4	Wet Weight per Cubic Foot - Lbs.	195.8
Air Content - Percent	5.8	Physical Yield - Cu.Ft.	27.24
Workability	Fair	Water/Cement Ratio	0.499

Note: Excessive bleeding was noted from test specimens.

Seven (7) Day Compressive Strength Tests Conducted on October 25, 1988

<u>Cylinder Number</u>	<u>Strength Lbs/Sq.In.</u>
1	3431
2	3289
3	3325
Average	3348

Twenty-Eight (28) Day Compressive Strength Tests Conducted on November 15, 1988

<u>Cylinder Number</u>	<u>Strength Lbs/Sq.In.</u>
4	5022
5	5129
6	5164
Average	5105

- (c) Gradation. The fine aggregate for trench backfill shall be Gradation FA 6 and for bedding FA 1, FA 2 or FA 6. The fine aggregate for porous granular embankment and backfill and french drains shall be Gradation FA 1 or FA 2.

703.06 Fine Aggregate for Membrane Waterproofing. The aggregate shall conform to the requirements of Article 703.01 and the following specific requirements:

- (a) Description. The fine aggregate shall consist of sand, stone sand, wet bottom boiler slag, slag sand or chats.
- (b) Quality. The fine aggregate shall meet the Class B Quality Deleterious Count, and when subjected to 5 cycles of the department's sodium sulfate soundness test (AASHTO T 104) the weighted average loss shall not be more than 10 percent.
- (c) Gradation. The fine aggregate shall be Gradation FA 8.

SECTION 704. COARSE AGGREGATE

704.01 Materials. The aggregate materials shall conform to the following requirements:

- (a) Description. The natural and manufactured materials used as coarse aggregate are defined as follows:

Gravel. Gravel shall be the coarse granular material resulting from the reduction of rock by the action of the elements and having subangular to rounded surfaces. It may be partially crushed.

Chert Gravel. Chert gravel shall be the coarse granular material occurring in alluvial deposits resulting from reworking by weathering and erosion of chert bearing geological formations and containing a minimum of 80 percent chert or similar siliceous material.

Crushed Gravel. Crushed gravel shall be the product resulting from crushing by mechanical means, and shall consist entirely of particles obtained by crushing gravel, all of which before crushing will be retained on a screen with openings equal to or larger than the maximum nominal size of the resulting crushed material. If approved by the Engineer, final product gradations may be obtained by screening or blending various sizes of crushed gravel material.

Pit or Bank Run Gravel. Pit or bank run gravel shall be a mixture of sand, gravel, silt and clay occurring naturally in a deposit, which is of such quality that it may be used with only minor processing.

Novaculite Gravel. Novaculite gravel shall be material occurring in natural deposits, composed of angular particles of siliceous origin and mixed with ferruginous clay.

Crushed Stone. Crushed stone shall be the angular fragments resulting from crushing by mechanical means the following types of rocks quarried from undisturbed, consolidated deposits: granite and similar phanerocrystalline igneous rocks; limestone; dolomite sandstone; or massive metamorphic quartzite, or similar rocks. Dolomite shall be a carbonate rock containing 11.0 percent or more magnesium oxide (MgO). Limestone shall be a carbonate rock containing less than 11.0 percent magnesium oxide (MgO).

Wet Bottom Boiler Slag. Wet bottom boiler slag shall be the hard, angular by-product of the combustion of coal in wet bottom boilers.

Crushed Slag. Crushed slag shall be the graded product resulting from the processing of air cooled blast furnace slag. Air cooled blast furnace slag shall be the nonmetallic product, consisting essentially of silicates and aluminosilicates of lime and other bases, which is developed in a molten condition simultaneously with iron in a blast furnace. It shall be air cooled and shall have a compact weight (AASHTO T 19) of not less than 70 pounds per cubic foot.

Crushed Sandstone. Crushed sandstone shall be the angular fragments resulting from crushing, by mechanical means, a cemented sand composed predominantly of quartz grains.

Crushed Concrete. Crushed concrete shall be the angular fragments resulting from crushing Portland cement concrete by mechanical means.

Chats. Chats shall be the tailings resulting from the separation of metals from the rocks in which they occur.

Crushed Steel Slag. Crushed steel slag shall be the graded product resulting from the processing of steel slag. Steel slag shall be the nonmetallic product which is developed in a molten condition simultaneously with steel in an open hearth, basic oxygen or electric furnace.

- (b) Quality. The coarse aggregate shall be from an approved source and shall meet the following quality standards and will be accepted on the basis of these tests unless unfavorable conditions showing up in usage indicate the material is unsatisfactory. All

coarse aggregate materials shall meet the specified quality requirements before being proportioned for mix or combined to adjust gradation.

COARSE AGGREGATE
QUALITY

QUALITY TEST	CLASS			
	A	B	C	D
Na ₂ SO ₄ Soundness 5 Cycle, AASHTO T 104 ^{4/} Max. % Loss	15	15	20	25 ^{9/}
Los Angeles Abrasion AASHTO T 96 Max. % Loss	40 ^{6/}	40 ^{8/}	40 ^{7/}	45
Minus No. 200 Sieve Mat'l. AASHTO T 11 Max. % Deleterious Mat'l's.	1.0 ^{1/}		2.5 ^{2/}	
- Shale Max. %	1.0	2.0	4.0 ^{5/}	
- Clay Lumps Max. %	0.25	0.5	0.5 ^{5/}	
- Coal & Lignite Max. %	0.25			
- Soft & Unsound Frag. Max. %	4.0	6.0	8.0 ^{5/}	
- Other Deleterious Max. %	4.0 ^{3/}	2.0	2.0	
- Total Deleterious Max. %	5.0	6.0	10.0 ^{5/}	

- 1/ For crushed aggregate, if the material finer than the No. 200 sieve consists of the dust from fracture, essentially free from clay or silt, this percentage may be increased to 2.5.
- 2/ Does not apply to aggregates for Class I Binders, Class B Mixtures, and Bituminous Base Course Mixtures.
- 3/ Includes deleterious chert. In gravel and crushed gravel aggregate, deleterious chert shall be the light weight fraction separated in a 2.35 heavy media separation. In crushed stone aggregate, deleterious chert shall be the lightweight fraction separated in a 2.55 heavy media separation.
- 4/ As modified by the Department.
- 5/ Does not apply to Class A Seal and Cover Coats.
- 6/ For Portland cement concrete, the maximum percent loss shall be 45.

- 7/ For Class I Bituminous Binder Courses and Bituminous Base Course, except when used as Surface Course, the maximum percent loss shall be 45.
- 8/ Does not apply to crushed slag or crushed steel slag.
- 9/ For aggregate surface course, the maximum percent loss shall be 30.

All varieties of chert contained in gravel coarse aggregate for Portland cement concrete, whether crushed or uncrushed, pure or impure, and irrespective of color, will be classed as chert and shall not be present in the total aggregate in excess of 25 percent by weight.

Aggregates used in handrail, parapet, end post and all other superstructure concrete shall contain no more than 2 percent total by weight of deleterious materials or substances whose disintegration is accompanied by an increase in volume which may cause spalling of the concrete.

At the time of use, the coarse aggregate shall be free from frozen materials and all foreign materials which may have become mixed with it during handling. Cars used for shipping the aggregate shall not be caulked with hay, straw, excelsior, grass or similar materials.

- (c) Gradation. The coarse aggregate shall be uniformly graded from coarse to fine and, when tested by means of laboratory sieves (square openings), shall conform to the following gradations.

The sizes prescribed may be manufactured by any suitable commercial process and by the use of any sizes or shapes of plant screen openings necessary to produce the sizes within the limits of the sieve analysis specified.

The gradation limits specified represent the limits which will determine suitability for use from all approved sources of supply. The gradation of the material from any one source shall be reasonably close to the gradation specified and shall not be subject to the extreme percentages of gradation represented by the tolerance limits for the various sieve sizes. The sizes are based on the use of square opening sieves in making analysis.

COARSE AGGREGATE GRADATIONS**

Grad No.	3"	2 1/2"	2"	1 1/2"	1"	3/4"	1/2"	3/8"	No. 4	No. 16	No. 50	No. 200*
CA 1	100	95+5	60+15	15+15	3+3		50+15	30+10	20+15			8+4
CA 2		100	95+5	75+15	75+15		3+3					8+4
CA 3		100	93+7	85+20	8+8		60+15	40+10	20+15			8+4
CA 4		100		95+5	85+10		5+5	3+3				
CA 5				97+3/	40+25		75+15	43+12	25+15			8+4
CA 6				100	95+5/		45+15/2/	5+5				
CA 7				100	97+3		55+10	10+5	3+3			
CA 8				100	97+3		60+15	30+15	10+10			6+6
CA 9				100	100		80+15	50+10	30+15			9+4
CA 10					100		45+15/	6+6	3+3/			
CA 11					100		95+5	85+10	60+10			9+4
CA 12					100		92+8	80+10	35+10			
CA 13/					100		100	75+15	3+3/			
CA 14							90+10/	45+20	3+3			
CA 15							100	75+15	2+2			
CA 16/								100	97+3	30+15	2+2/	
CA 17	100							65+20	45+20	20+10	10+5	
CA 18	100							75+25	55+25	10+10	2+2	
CA 19	100							60+15	40+15	20+10	10+5	

* Subject to Maximum percent allowed in Coarse Aggregate Quality Table.

1/ Shall be 100 percent passing the 1 3/4" sieve.

2/ When using gradation CA 7 for A binder, the percent passing the 1/2" sieve may also be 35+10 or 15 + 10.

3/ 100 percent passing 5/8" sieve.

4/ The No. 16 requirement will be waived when CA 11 is used in the manufacture of Portland Cement Concrete.

5/ When using gradation CA 13 and CA 16 for Class 1 bituminous mixtures, the No. 16 requirement may be 4+4 if produced from a washed aggregate.

6/ When crushed slag or crushed steel slag is used for Class 1 Bituminous Surface Course, Mixture C, D, or E, the percent passing the No. 16 sieve may also be 7+7 and the percent passing the No. 200 sieve may also be 3+3.

7/ When using gradation CA 11 for B binder, the percent passing the 1/2" sieve may also be 15+10.

- (d) Incompatibility. Incompatibility of any of the gradations or combinations of gradation permitted resulting in unworkable mixtures, non-adherence to the final mix gradation limits, or any other indication of incompatibility shall be just cause for rejection of one or both of the sizes.
- (e) Storage of Coarse Aggregate. Sites for stockpiles shall be grubbed and cleaned prior to storing the aggregates.

The stockpiles shall be built in layers not exceeding 5 feet in height, and each layer shall be completely in place before the next layer is started. A stockpile may be expanded by again starting the expansion from the ground and building layers as before. End dumping over the sides will not be permitted. Steel track equipment will not be permitted on stockpiles of specified Class A Quality coarse aggregate. When loading out of stockpiles, vertical faces shall be limited to reasonable heights to eliminate segregation due to tumbling. Aggregate producer's stockpiling methods currently in use and proven satisfactory to the Engineer may be continued at the source. Segregation or degradation due to improper stockpiling or loading out of stockpiles shall be just cause for rejecting the material.

Separate stockpiles shall be provided for the various kinds of aggregates. Stockpiles shall be separated to prevent intermingling at the base. If partitions are used, they shall be of sufficient heights to prevent intermingling. Coarse aggregates for Portland cement concrete and bituminous mixtures shall be handled in and out of the stockpiles in such a manner that will prevent contamination and degradation.

Crushed slag for Portland cement concrete shall be stockpiled in a moist condition (saturated surface dry or greater) and the moisture content shall be maintained uniformly throughout the stockpile by periodic sprinkling.

704.02 Coarse Aggregate for Portland Cement Concrete. The aggregate shall conform to the requirements of Article 704.01 and the following specific requirements:

- (a) Description. The coarse aggregate shall be gravel, crushed gravel, crushed stone, crushed concrete, crushed slag or crushed sandstone.
- (b) Quality. The coarse aggregate shall be Class A quality.
- (c) Gradation. The gradations used in the construction of concrete pavement shall be Gradation CA 5, CA 7 and CA 11. CA 14 may be used in concrete pavement when the

TEST AND INSPECTION IDENT

TEST ID NO: 8952883

LAST MODIFIED: 071989

INSPECTOR NO: 353428348

NAME: CARTER

LOUIE

AGENCY: 98

DATE SAMPLED: 050589

SEQUENCE NO: 89198A

TYPE OF INSP: PRE

ORIGINAL IDENT:

TEXT IDENT: 8952883

LAST IDENT:

TOTAL SAMPLES: 01

PRODUCER NO: 51193-93 NAME: INTERNATIONAL MILL

LOC: HARTFORD

IL

SUPPLIER NO:

NAME:

LOC:

MATERIAL CODE: 029CA07

NAME: SPECIAL AGG CLAB

DESCRIPTION:

INSPECTED QTY:

UNITS: TONS

NO. ITEMS:

SPEC TITLE:

ARTICLE:

EFFECTIVE DATE:

SAMPLED FROM: STOCK(200T)

COPY: Y

RESPONSIBLE LOC: 50

LAB: AG

NAME:

DATE RECEIVED: 051989

START DATE: 070589

COMPLETE DATE: 071889

TEST RESULTS COMP

AUTHORIZED BY: SCHUTZBACH

REMARKS: STOCK(200T)-241-MEETS SPECS.

MESSAGE: MULT PAGES PLEASE PRESS-PA2 KEY

SOUNDNESS, ABRASION TEST: 01

TEST ID NO: 8952883

PROD: 51193-93 INTERNATIONAL MILL MATERIAL: 029CA07 SPECIAL AGG CLAQ

SOUNDNESS

APPROVED FOR:

FINE	COARSE	ORIGINAL	WT.	WT.	PAN	WT. AVG
ASS-RETAIN	PASS-RETAIN	GRADATION	BEFORE	AFTER	LOSS, %	LOSS
4	8	2.5 4.25	:	:	:	:
8	16	4.5 5/8	:	:	:	:
6	30	3/4 5/16	:	75 : 1500.0	: 1487.0	.9 .7
30	50	3/8 5	:	25 : 1000.0	: 992.0	.8 .2
		1.5 3/8	:	:	:	:

WEIGHTED AVG, % LOSS: 1 SPEC: *15 unless* IN/OUT:

REFER TO ID: WEIGHTED AVG, % LOSS:

NONCRITICAL: AVG WEIGHTED AVG, % LOSS: RANGE TO

LA ABRASION - GRADING: B REFER TO ID: % LOSS:

RIG. WT: 5000 FINAL WT: 3700 % LOSS: 26 SPEC: *45 unless* IN/OUT:

NONCRITICAL: AVERAGE % LOSS: RANGE TO

EIGHT PER CUBIC FOOT

FACTOR: WEIGHT, LBS: LBS/CU. FT: SPEC: IN/OUT:

CLAY DECANTED

RIG. WT: WASH. WT: CLAY, %: SPEC: IN/OUT:

MORTAR STRENGTH, 14 DAY, PSI: SPEC: IN/OUT:

REMARKS:

MESSAGE. MULT PAGES PLEASE PRESS-PAGE KEY

DELETERIOUS, ABSORPTION TEST: 01

TEST ID NO: 8952883

PROD: 51193-93 INTERNATIONAL MILL MATERIAL: 029CA07 SPECIAL AGG CLAR

DELETERIOUS COUNT - RETAINED ON SIEVE: #4

	TOTAL	DELET	SOFT + COAL, SHELL	CLAY	OTHER	TOTAL
	CHERT	CHERT	UNBOUND + LIGNITE	LUMPS	SHALE	CONGLOM DELET DELET
WEIGHT :	:	:	4	:	:	4
% OF WT:	:	:	.2	<i>Standard is 4% or less</i>		
MAX SPEC:	:	:	:	:	:	:
IN/OUT :	:	:	:	:	:	:

ABSORPTION

	CHERT	UNBOUND	OTHER	REPRESENTATIVE	
ORIGINAL WT :	:	:	2058.0	2058.0	
NET WEIGHT :	:	:	2069.0	2069.0	
SUBMERGED WT :	:	:	1516.0	1516.0	
DRY SP.GR. :	:	:	3.72	3.72	SURFACE DRY: (3.74)
ABSORPTION, % :	:	:	0.5	(0.5)	

FINE AGGREGATE- VOIDS TYPE: COLORIMETRIC:

REMARKS:

MESSAGE: MULT PAGES PLEASE PRESS-PA2 KEY

*Article 704.01
p. 618.*

LAB GRADATIONS TEST: 01

TEST ID NO: 8952883

first gradation

PROD: 51193-93 INTERNATIONAL HILL MATERIAL: 029CA07 SPECIAL AGG CLAS

				IN/					WT.	%		IN/
SIZE	RETAIN	PASS	SPECS	OUT	SIZE	RETAIN	PASS	SPECS	OUT			
3 :	:	:	:	:	8 :	:	:	:	:	:	:	:
7.5 :	:	:	:	:	10 :	:	:	:	:	:	:	:
2 :	:	:	:	:	16 :	:	:	:	:	:	:	:
.5 :	:	:	:	:	30 :	:	:	:	:	:	:	:
1 :	0 :	106.3	:	:	40 :	:	:	:	:	:	:	:
1/4 :	1616 :	86.4	:	:	50 :	:	:	:	:	:	:	:
1/2 :	4764 :	22.3	:	:	80 :	:	:	:	:	:	:	:
1/8 :	1402 :	5.4	:	:	100 :	:	:	:	:	:	:	:
4 :	101 :	4.2	:	:	200 :	:	:	:	:	:	:	:

PARTIAL WT :

TOTAL DRY: 8228 TOTAL WASH: 8135 % FINER THAN 200: 1.13

LIQUID LIMIT: PLASTIC LIMIT: PLASTIC INDEX:

REMARKS:

MESSAGE: MULT PAGES PLEASE PRESS-PA2 KEY

TEST AND INSPECTION IDENT

TEST ID NO: 8952815

LAST MODIFIED: 071989

INSPECTOR NO: 353-28348

NAME: CARTER

LOUIE

AGENCY: 98

DATE SAMPLED: 050589

SEQUENCE NO: 89197A

TYPE OF INSP: PRE

ORIGINAL IDENT:

TEXT IDENT: 8952815

LAST IDENT:

TOTAL SAMPLES: 01

PRODUCER NO: 51193-93 NAME: INTERNATIONAL MILL

LOC: HARTFORD

IL

SUPPLIER NO:

NAME:

LOC:

MATERIAL CODE: 032CH13

NAME: SPEC AGG CLBQ

DESCRIPTION:

INSPECTED QTY:

UNITS: TONS

NO. ITEMS:

WPEC TITLE:

ARTICLE:

EFFECTIVE DATE:

SAMPLED FROM: STOCK (200T)

COPY: Y

RESPONSIBLE LOC: 50

LAR. AG

NAME:

DATE RECEIVED: 051989

START DATE: 070589

COMPLETE DATE: 071889

TEST RESULTS: COMP

AUTHORIZED BY: SCHUTZBACH

REMARKS: STOCK (200T)-S#1-MEETS SPECS.

MESSAGE: MULT PAGES PLEASE PRESS-PA2 KEY

SOUNDNESS, ABRASION TEST: 01

TEST ID NO: 3952815

PROD: 51193-93 INTERNATIONAL MILL MATERIAL: 039CM13 SPEC AGG CLBQ

SOUNDNESS

APPROVED FOR:

FINE		COARSE		ORIGINAL	WT.	WT.	PAN	WT. AVG
ASS-RETAIN	PASS-RETAIN	GRADATION	BEFORE	AFTER	LOSS, %	LOSS		
4	8	2.5 1.25	:	:	:			
8	16	4.5 5/8	:	:	:			
6	30	3/4 5/16	:	:	:			
30	50	3/8 5	:	100	1000.0	992.0	1.8	1.8
		1.5 5/8	:	:	:			

WEIGHTED AVG, % LOSS: 1 SPEC: IN/OUT:

REFER TO ID: WEIGHTED AVG, % LOSS:

NONCRITICAL: AVG WEIGHTED AVG, % LOSS: RANGE TO

LA ABRASION - GRADING: C- *sig* *material* *(Preserved)* REFER TO ID: % LOSS:

RIG. WT: 5000 FINAL WT: 3888 % LOSS: 22 SPEC: IN/OUT:

NONCRITICAL: AVERAGE % LOSS: RANGE TO

EIGHT PER CUBIC FOOT

FACTOR: WEIGHT, LBS: LBS/CU. FT: SPEC: IN/OUT:

CLAY DECANTED

RIG. WT: WASH. WT: CLAY, %: SPEC: IN/OUT:

MORTAR STRENGTH, 14 DAY, PSI: SPEC: IN/OUT:

REMARKS:

MESSAGE: MULT PAGES PLEASE PRESS-PA2 KEY

DELETERIOUS, ABSORPTION TEST: 01

TEST ID NO: 8952815

PROD: 51193-93 INTERNATIONAL MILL MATERIAL: 039CM13 SPEC AGG CLKQ

DELETERIOUS COUNT - RETAINED ON SIEVE: #4

	TOTAL	DELET	SOFT + COAL SHELL	CLAY		OTHER	TOTAL
	CHERT	CHERT	UNBOUND + LIGNITE	LUMPS	SHALE	CONGLOM	DELET
WEIGHT :	:	:	:	:	:	:	:
% OF WT:	:	:	:	:	:	:	:
MAX SPEC:	:	:	:	:	:	:	:
IN/OUT :	:	:	:	:	:	:	:

ABSORPTION

	CHERT	UNBOUND	OTHER	REPRESENTATIVE	
ORIGINAL WT	:	:	:	1890.0	1890.0
NET WEIGHT	:	:	:	1811.0	1811.0
SUBMERGED WT	:	:	:	1327.0	1327.0
DRY SP.GR.	:	:	:	3.72	3.72
					SURFACE DRY: 3.74
ABSORPTION, %	:	:	:	0.6	0.6

FINE AGGREGATE- VOIDS TYPE: COLORIMETRIC:

REMARKS:

MESSAGE: MULT PAGES PLEASE PRESS-PAZ KEY